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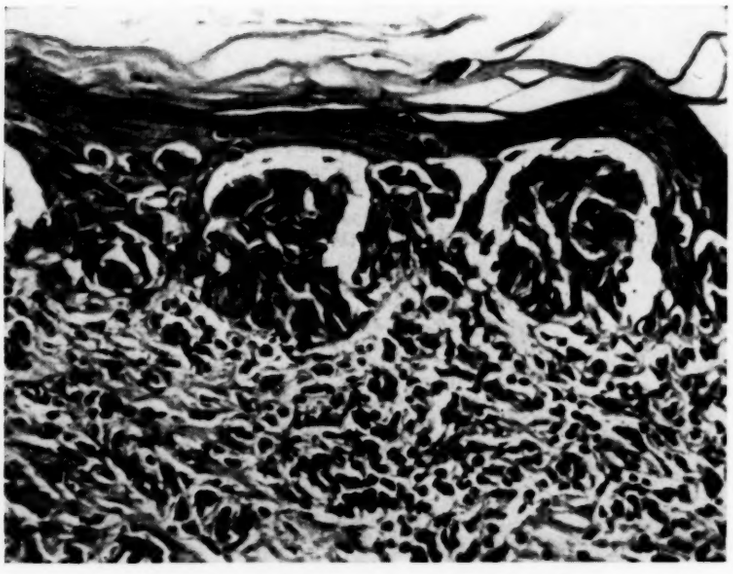

Fig. 499. Junctional nevus with a suspicion of a developing malignant melanoma. × 250.

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DRUGS RECENTLY INTRODUCED FOR HYPERTENSION

Keith S. Grimson, M.D., Durham, N. C.

During the last five years several drugs have been introduced for the treatment of hypertension. Of these, hexamethonium, pentolinium tartrate (Ansolysen), and Ecolid [4, 5, 6, 7-tetrachloro-2-(2-dimethylaminoethyl) isoindoline dimethochloride], which was known experimentally as Su 3088, are orally active agents that reduce blood pressure by blocking or suppressing cholinergic nerve transmission through the sympathetic and parasympathetic ganglions. Hydralazine (Apresoline) hydrochloride has a moderate adrenolytic or sympatholytic action. There is some evidence that it increases renal blood flow, depresses the midbrain, or neutralizes certain humoral vasopressor substances. Alkavervir (Veriloid) and protoveratrines A and B (Veralba), alkaloids of Veratrum viride and Veratrum album, respectively, induce dilatation of arterioles by acting on vasomotor centers or influencing the receptors of the buffer nerves. The Veratrum drugs slow the heart rate and in larger doses cause nausea and then vomiting and salivation. Rauwolfia serpentina, its purified fraction, alseroxylon, or its crystalline alkaloid, reserpine, have a peculiar central sedative action. These drugs are described as capable of relieving anxiety without causing somnolence. Rauwolfia and its extracts are also recommended for reducing labile hypertension and for treatment of a variety of functional conditions or mental disorders. Each of these new drugs was supplied to us at Duke University School of Medicine at an early stage of its development. Each has been evaluated by pharmacological studies in animals and by tests and therapeutic trial in patients. The purpose of this report is to outline the background of the development of these drugs, describe experiences, and then to comment on principles of therapy.

DEVELOPMENT OF THE DRUGS

Hexamethonium Salts.—The iodide, bromide, and bitartrate salts of hexamethonium were developed and distributed by May & Baker Ltd. in England. Reports by Burt and Graham, Kay and Smith, Smirk, Turner, and Campbell and Robertson in 1950 described early results. The bitartrate salt has been widely used in Great Britain, New Zealand, and other countries. Bromide and bitartrate salts were furnished investigators in this country in 1951. E. R. Squibb & Sons supplied a solution of hexamethonium bromide (Bistrium). However, the chloride salt has been generally preferred in this country. Tablets containing 250 mg. of the chloride salt are supplied by Warner-Chilcott Laboratories (Methium), Burroughs Wellcome & Company, Inc. (Hexameton), Ciba Pharmaceutical Products, Inc. (Esomid), and E. R. Squibb & Sons (Bistrium). Hexamethonium is an old chemical and is not restricted by patents.

With intramuscular or intravenous administration of hexamethonium to patients, a prompt reduction of blood pressure usually occurs. With oral administration reduction of blood pressure and postural hypotension usually develop only after several days of continuous treatment. The dose of hexamethonium varies widely, 1.3 to 135.0 mg. of the chloride salt is given parenterally or 0.125 to 1.0 gm. orally. The delay of occurrence of hypotensive effects and the large amount of drug necessary with oral administration is a result of an inefficient but slow and usually constant absorption from the gastrointestinal tract. There have been many encouraging reports of clinical trial with hexamethonium orally. That of Moyer, Miller, and Ford [1] is typical. They treated 120 patients under conditions that closely paralleled those met in general office practice. Of the 120, all but 17 responded with a significant reduction in blood pressure.

Pentolinium Tartrate.—Pentolinium tartrate was also developed by May & Baker Company Ltd. Its manufacture is restricted by patent. It is distributed in the United States by Wyeth Laboratories, Inc. Maxwell and Campbell [2] described it in 1953 as they reported the testing of 11 new ganglion-blocking agents in patients. They observed reduction of blood pressure and found that it usually developed two to four hours after ingestion and lasted eight hours or longer. Smirk [3] stated that oral doses

From the Department of Surgery, Duke University School of Medicine.
This study was supported by a research grant from the Heart Institute of the National Institutes of Health, Public Health Service.

1. Moyer, J. H.; Miller, S. I., and Ford, R. V.: Orally Administered Hexamethonium Chloride in Hypertension, J. A. M. A. **152**: 1121-1129 (July 18) 1953.
2. Maxwell, R. D. H., and Campbell, A. J. M.: New Sympathicolytic Agents, Lancet **1**: 455-457, 1953.
3. Smirk, F. H.: Action of a New Methonium Compound in Arterial Hypertension: Pentamethylene 1:5-Bis-n-(n-Methyl-Pyrrolidinium) Bitartrate (M. & B. 2050A), Lancet **1**: 455-457, 1953.

sufficient to reduce blood pressure to near normal levels had their greatest effect after 1½ to 3 hours and lasted 6 to 8 hours. He noted that the effect was greater if the drug was given before meals. The dose before breakfast varied from 70 to 680 mg. of the salt, and the total dose during the day varied from 140 mg. to 1.2 gm., with an average of 596 mg. Concerning oral use he stated: "Where capricious alimentary absorption is combined with a critical dosage level a bewildering variation of response may be encountered." Freis and co-workers [4] reported reduction of blood pressure in 27 patients treated with the drug orally, immediately after arising, and at subsequent eight hour intervals. He recommended neostigmine or irritant cathartics to induce bowel movements. Wyeth's dosage instructions recommend neostigmine upon arising, a dose of pentolinium tartrate after breakfast, and use of reserpine daily, quoting E. D. Freis. These instructions to doctors are contrary to the recommendations of Maxwell and of Smirk. Gifford, Allen, and Birkhead [5] tested pentolinium tartrate orally and by subcutaneous injection and were not impressed by longer duration of effects as compared to hexamethonium. They found severity of side-reactions disappointingly great.

Ecolid.—The ganglion-blocking agent Ecolid was developed in the United States and patented by Ciba Pharmaceutical Products, Inc., Summit, N. J. It is now supplied to investigators as a 50 mg. tablet but is not yet released for general use. Plummer and co-workers [6] selected it after studying the ganglion-blocking activity of a series of bisquaternary tetrachloroisoindolines in animals. They found that this drug was the most effective of the series upon oral administration and that it was five times as potent and persistent as hexamethonium. Our studies and initial testing and trial in 18 patients [7] confirmed the oral effectiveness, long duration of action, and smaller milligram requirement. Our dose ranged from 25 to 200 mg., usually 50 to 100. Ingestion an hour before breakfast was most effective. Since effects lasted as long as 12 hours, a second dose if needed was advised an hour and a half after the evening meal. It was anticipated that the lower milligram requirement for a dose and the decreased frequency of doses would represent an economy for patients. As with hexamethonium and pentolinium the time of gastric emptying was delayed and neostigmine nullified drug actions by deblocking the ganglions.

Hydralazine Hydrochloride.—Hydralazine hydrochloride was developed and patented by Ciba Limited, Basel, Switzerland. We performed initial testing and trial in patients with hypertension in 1949.[8] The drug was then abandoned because it did not significantly reduce blood pressure in doses of 50 to 200 mg. and because of frequent occurrence of headache and nausea. Taylor, Dustan, Corcoran, and Page [9] and Schroeder [10] revived interest in 1952. The present dose varies from 10 to 150 mg. orally four times a day. Proponents of hydralazine have frequently combined it with hexamethonium to reduce blood pressure, also with antihistamines to reduce headaches and alleviate gastrointestinal symptoms. Occasionally the drug causes a syndrome resembling rheumatoid arthritis or systemic lupus erythematosus. Corcoran, Dustan, Taylor, and Page,[11] reported in 1954 that they maintained 54 patients on this drug alone for 15 to 30 months and considered them as responding to treatment because of reduction of diastolic blood pressures to under 110 mm. Hg. Another 32 patients failed to show this response. Doses as high as 800 mg. a day were used. Two of the 54 developed the rheumatic and febrile syndrome.

Alkavervir and Protoveratrines A and B.—Reports of Craig and Jacobs; Krayer and Acheson; Maison and Stutzman; Meilman, Hoobler, and Corley; Freis, Stanton and Moister, and other investigators reporting between 1943 and 1950 renewed interest in Veratrum viride, Veratrum album, and their fractions or pure alkaloids. Many pharmaceutical houses worked toward the development of this unrestricted drug. The crude Veratrum viride root has been supplied by Irwin, Neisler & Company (Vertavis) in tablets containing 130 of their units. Extracted or purified mixed alkaloids of Veratrum viride have been prepared by Riker Laboratories, Inc., in tablets of 1, 2, or 3 mg. (Veriloid) and by E. R. Squibb & Sons in tablets containing one Squibb unit (Vergitryl). The crystalline compound, protoveratrines A and B, obtained from Veratrum album, has been produced by Eli Lilly & Company (Provell maleate) and by Pitman Moore Company (Veralba) and supplied as tablets containing 0.2 or 0.5 mg. Another alkaloid fraction of Veratrum viride, cryptenamine, is supplied by Irwin, Neisler & Company (Unitensen tannate) in tablets of 2 mg. Other companies have products of Veratrum, but usually they have supplied tablets containing the alkaloid along with other drugs.

A typical report on Veratrum is that by Currens, Myers, and White [12] concerning treatment of 100 patients with protoveratrine. They described control of blood pressure and relief of symptoms in 27 who were selected by their ability and willingness to take the drug and were followed six months to three years. They conclude that delicate regulation of the individual dose is necessary to obtain a desirable effect without symptoms of overdosage. Corcoran, Dustan, Taylor, and Page [11] state that no advan-

4. Freis, E. D.; Partenope, E. A.; Lilienfield, L. S., and Rose, J. C.: A Clinical Appraisal of Pentapyrrolidinium (M&B 2050) in Hypertensive Patients, Circulation **9**: 540-546, 1954.

5. Gifford, R. W., Jr.; Allen, E. V., and Birkhead, N. C.: Pentapyrrolidinium Bitartrate (M.&B. 2050A) in the Treatment of Hypertension: Preliminary Observations, Proc. Staff Meet. Mayo Clin. **29**: 496-508, 1954.

6. Plummer, A. J.; Trapold, J. H.; Earl, A. E., and Maxwell, R. A.: Ganglionic Blockade in a New Bis-Quaternary Series Including Ecolid (Chlorisondamine Dimethochloride) (Su 3088), Tetrachloro-2-(Dimethylaminoethyl-Isoindoline Dimethochloride, J. Pharmacol. & Exper. Therap., to be published.

7. Grimson, K. S.; Tarazi, A. K., and Frazer, J. W., Jr.: A New Orally Active Quaternary Ammonium, Ganglion Blocking Drug Capable of Reducing Blood Pressure, Su-3088, Circulation **11**: 733-741, 1955.

8. Grimson, K. S.; Chittum, J. R., and Metcalf, B. H.: Actions of L-Hydrazinophthalazine (C-5968) on Vasomotor Reflexes and Hypertension in Dogs and Man, abstracted, Proceedings of the 40th Annual Meeting of the American Society for Pharmacology and Experimental Therapeutics, Fed. Proc. **9**: 279, 1950.

9. Taylor, R. D.; Dustan, H. P.; Corcoran, A. C., and Page, I. H.: Evaluation of l-Hydrazinophthalazine ("Apresoline") in Treatment of Hypertensive Disease, A. M. A. Arch. Int. Med. **90**: 734-749 (Dec.) 1952.

10. Schroeder, H. A.: The Effect of l-Hydrazinophthalazine in Hypertension, Circulation **5**: 28-37, 1952.

11. Corcoran, A. C.; Dustan, H. P.; Taylor, R. D., and Page, I. H.: Management of Hypertensive Disease, Am. J. Med. **17**: 383-394, 1954.

12. Currens, J. H.; Myers, G. S., and White, P. D.: The Use of Protoveratrine in the Treatment of Hypertensive Vascular Disease, Am. Heart J. **46**: 576-592, 1953.

tage of protoveratrine has been defined over the mixture of alkaloids in alkavervir. A large proportion of their patients did not respond by decrease of arterial pressure. Although several companies have claimed an advantage for their products in more widely separating the hypotensive dose from that which produces nausea or vomiting, this group of drugs remains similar in action and efficacy.

Rauwolfia Serpentina and Reserpine.—Extracts of the roots of the shrub Rauwolfia serpentina have been used in India for centuries as an antidote for snakebite, a remedy for dysentery, a medicine to reduce fever, and as a sedative or a treatment for insanity. Its use in India for hypertension increased after the pharmacological experiments of Chopra, Gupta, and Mukherjee [13] in 1933. Interest in the United States accelerated after the report by Wilkins [14] in 1952. There are no patent restrictions. Tablets containing 50 or 100 mg. of the whole root are supplied by E. R. Squibb & Sons (Raudixin) and by Lloyd & Dabney Co., Inc. (Wolfina). A purified fraction of Rauwolfia serpentina, alseroxylon, is available in tablets of 2 mg. made by Riker Laboratories, Inc. (Rauwiloid), by the National Drug Company (Rau-Tab), and by Smith-Dorsey (Rautensin). In 1952, Müller, Schlittler, and Bein [15] of Ciba Limited, Basel, Switzerland, isolated a crystalline alkaloid named reserpine. Tablets containing 0.1 or 0.25 mg. have been made available by at least seven pharmaceutical houses. Some confusion is caused by use of the whole root, the fraction, alseroxylon, or the crystalline alkaloid, each with a different dose. Fortunately, a single tablet of any one of these preparations is approximately equal to any other in therapeutic effects.

Wilkins [14] recommended use of Rauwolfia for hypertension in patients with anxiety neuroses and a labile blood pressure particularly when there was an associated tachycardia. Subsequent reports by him and by others describe partial relief of symptoms and occasional reduction of blood pressure in patients with mild hypertension but emphasize that occasional patients experience troublesome mental disturbances.

Combination Drug Therapy.—During the last five years the use of combinations of drugs as treatment of hypertension has become an increasingly more frequent practice. Certain pharmaceutical companies are now distributing tablets containing two or more drugs. However, the necessary adjustment of the dose of the individual drug for each patient is not possible, and use of these tablets may lead to inadequate dose of one ingredient or excessive dose of another. Combinations achieved by prescribing separately the adequate dose of each drug may have merit if adequate benefit cannot be obtained otherwise. Wilkins,[14] stated in 1952 that he relied upon various combinations of hydralazine hydrochloride, Rauwolfia, and Veratrum because these drugs appeared safest and could be used together in relatively small doses with fewer symptoms or side-effects than would be produced by use of any one alone. He has since added newer drugs to his selections for combinations. Schroeder [16] aggressively combined hexamethonium and hydralazine, each in full therapeutic doses. With this regimen he states that benign arterial hypertension can be effectively controlled at normotensive or near normotensive levels in every case. Caution with regard to use of hexamethonium and hydralazine was reported,[17] emphasizing the risk associated with abrupt reduction of blood pressure in patients with encephalopathy, damaged myocardium, or renal insufficiency. Many authors believe that the value of routine use of combinations is still undetermined.

One or more forms of each new type of drug was supplied this laboratory when available for investigation. Each new drug was first tried in animals and then in tests in patients. In the interest of brevity these studies will not be discussed. One or more drug of each group was then selected for therapeutic trial in a series of patients. The patients in each trial series had moderately severe to severe hypertension but did not have frank cardiac or renal failure. Treatment was started only after several days of rest and study in the hospital. Blood pressures obtained in the hospital and in the office were entered on individual master charts, and symptoms were carefully recorded. Blood pressure readings in the office were obtained every few weeks or oftener by family physicians and also by ourselves at less frequent intervals. Each drug was tried as the only method of treatment for the patient. For each drug the dose was increased to tolerance in the hope of achieving symptomatic improvement and a definite reduction of systolic and diastolic pressure. Trial was continued until it was evident that this could not be achieved or is continuing if it was achieved. Altogether 195 patients were treated during the five years. Their age varied from 18 to 67 years, with an average of 44. This method of study is similar to that employed during 15 years for evaluation of results of total thoracic and partial lumbar sympathectomy, splanchnicectomy, and celiac ganglionectomy.[18]

EXPERIENCES WITH THE DRUGS

Hexamethonium.—One hundred fifteen patients were started on a regimen of hexamethonium bromide, bitartrate, or chloride orally between November, 1950, and November, 1953. In an additional 9 patients, not included in the 115, the drug was tried for a week or more in the hospital, but they had a brittle hypertension that could not be regulated. In these, episodes of prostrating hypotension alternated with episodes of hypertension. The bromide salt was first tried in 19 of the 115 patients and then abandoned after a few months because it pro-

13. Chopra, R. N.; Gupta, J. C., and Mukherjee, B.: The Pharmacological Action of an Alkaloid Obtained from Rauwolfia Serpentina, Benth.: Preliminary Note, Indian J. M. Res. **21**: 261-271, 1933.

14. Wilkins, R. W.: New Drug Therapies in Arterial Hypertension, Ann. Int. Med. **37**: 1144-1155, 1952.

15. Müller, J. M.; Schlittler, E., and Bein, H. J.: Reserpin, der sedative Wirkstoff aus Rauwolfia serpentina Benth., Experientia **8**: 338, 1952.

16. Schroeder, H. A.: Control of Hypertension by Hexamethonium and 1-Hydrazinophthalazine: Preliminary Observations, A. M. A. Arch. Int. Med. **89**: 523-540 (April) 1952.

17. Grimson, K. S.; Orgain, E. S.; Rowe, C. R., Jr., and Sieber, H. A.: Caution with Regard to Use of Hexamethonium and "Apresoline," J. A. M. A. **149**: 215-220 (May 17) 1952.

18. Grimson, K. S.; Orgain, E. S.; Anderson, B., and D'Angelo, G. J.: Total Thoracic and Partial to Total Lumbar Sympathectomy, Splanchnicectomy and Celiac Ganglionectomy for Hypertension, Ann. Surg. **138**: 532-547, 1953.

duced brominism. Twenty-six received the bitartrate salt during two years, until its supply in this country was discontinued. The chloride salt became available early in 1951, and new patients were then started on a regimen with it. In all earlier patients therapy was changed to hexamethonium chloride by July, 1953. The bitartrate

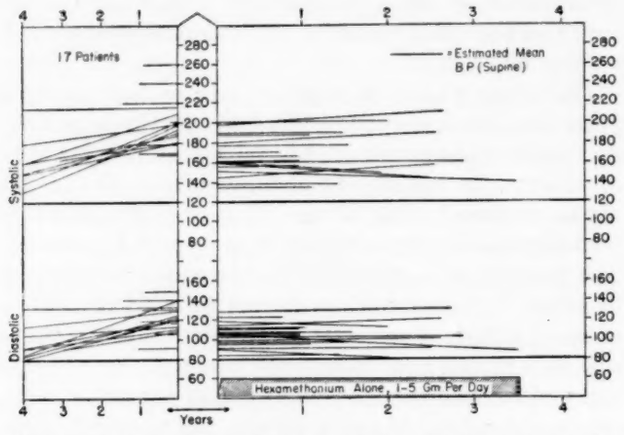

Fig. 1.—Blood pressure trend four years before and during three and a half years of use of hexamethonium. The "estimated mean" blood pressure lines were abstracted from individual master graphs, each composed of readings of supine blood pressure obtained during office visits.

tablets contained 350 mg. and the chloride tablets 250 mg. of the salt. As patients changed to therapy with the chloride form, each experienced increased hypotensive effects and reduced the number of tablets a day. For 15 in whom therapy was changed directly from the bitartrate to the chloride form and who were asked to use the same number of tablets, the reduction of dose was from an average of 4.1 gm. a day during a year or more of therapy with the bitartrate to 3 gm. a day for a year or more of therapy with the chloride form. At this reduced dose, the number of patients requiring cathartics for constipation increased from two to four, the number requiring mild laxatives changed from seven to eight, and the number with no constipation decreased from six to three. Each patient preferred the bitartrate form. Typical comments were: "the chloride is too strong" or "the chloride causes nausea." The greater potency of the chloride tablets should be taken into account when comparing results of use of hexamethonium in this country with results reported concerning use of the bitartrate tablets in England and New Zealand.

Dosage: Hexamethonium therapy was started for each of the 115 patients in the hospital after blood pressure levels had stabilized. The usual dose for the first day was one tablet, 250 mg., before each meal and at bedtime. Smaller initial doses, 125 mg., were used for patients who had had a sympathectomy. Two tablets were given four times the second day. A cathartic was ordered if necessary to achieve a bowel movement every other day. Some patients developed postural hypotension, dryness of mouth, or blurring of vision this second day, but most required increases of an additional tablet before each meal and at bedtime every day or two until the total dose reached 3, 4, or, exceptionally, 5 gm. a day. When the dose was regulated, each patient was discharged with careful instructions to achieve a bowel movement every other day, using a laxative if necessary, and to omit or reduce doses whenever weakness or postural dizziness evidenced excessive drug action. Nevertheless, seven patients experienced a few days of ileus and hypotension during the first month of treatment. Only one patient developed such a prostrating episode during the succeeding years of observation.

Of the 115 patients started on a regimen of hexamethonium, 77 had had conventional medical treatment and 38 a "total" sympathectomy before this treatment. Although the paravertebral chains are removed from T-1 through L-1 or L-2 inclusive, some regeneration occurs. Sympathectomy does not remain complete, and drug action is possible. Of the 77 who had not had sympathectomy, 41 continue use of hexamethonium, 14 discontinued, and 22 were advised to stop. Of the 38 who had had sympathectomy, 28 continue with treatment, 5 discontinued, and 5 were advised to stop. Reasons for discontinuing by the patient or stopping because of medical advice will be summarized and the subsequent course of these patients stated. First, results of treatment in those patients who continued therapy with hexamethonium will be given.

Results: Of the 41 patients who had not had sympathectomy and now continue treatment, 19 received no other drug. Seventeen are living. The dose of hexamethonium varied from 1 to 5 gm. a day, with an average of 3 gm. The effect on blood pressure is graphed in figure 1. Of the two patients who died, one had a posterior infarction and had been taking quinidine before starting hexamethonium therapy. He died of a second coronary occlusion after three weeks of treatment. The other had had a cerebral vascular accident 5 months before treatment and died of a second cerebral vascular accident after 11 months.

Of the 41 patients who had not had sympathectomy and continue treatment, 22 received trial of a second drug, hydralazine or Rauwolfia, for periods of 3 to 36

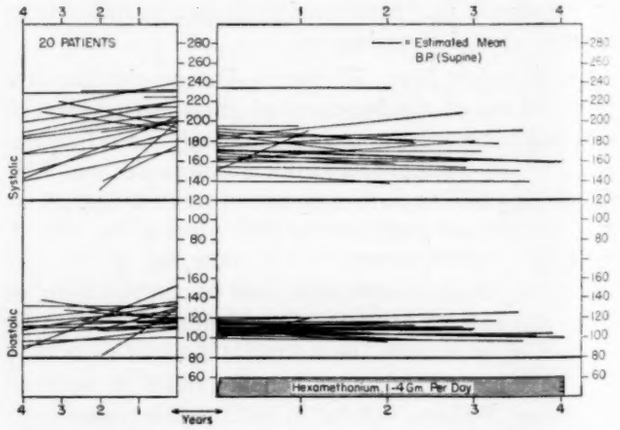

Fig. 2.—Blood pressure trend four years before and during four years of use of hexamethonium. At some time the 20 patients also received a short course of combined therapy with either hydralazine or Rauwolfia; however, they started with and continue taking hexamethonium only.

months, with an average of 12 months, and then returned to therapy with hexamethonium alone. Twenty are still living. The dose of hexamethonium varied from 1 to 4 gm. a day, with an average of 2.6 gm. The effect

of treatment on blood pressure is graphed in figure 2. Examination of individual master charts did not indicate any additional change of blood pressure during the time of use of the second drug. Two patients died, one suddenly at 10 months and another at 32 months, each of coronary thrombosis.

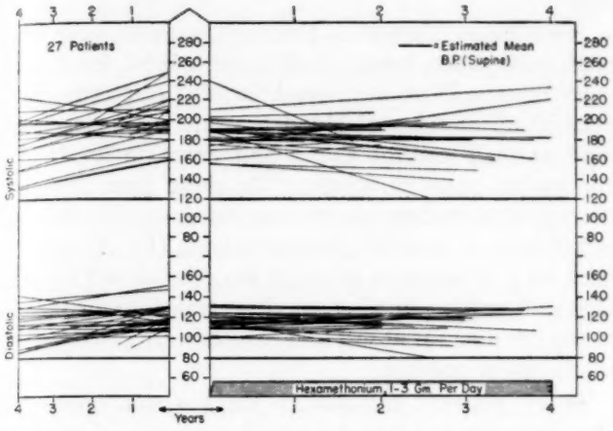

Fig. 3.—Blood pressure trend four years before and during four years of use of hexamethonium in patients in whom sympathectomy had been done.

Of the 28 patients who had had sympathectomy and continue treatment, 27 are alive. One died at 15 months with a cerebral vascular accident. The effect of treatment on the hypertension that persisted after the sympathectomy in the 27 patients is graphed in figure 3. The dose of hexamethonium chloride varied from 1 to 3 gm. a day, with an average of 2.3 gm.

Patients' Reasons for Discontinuing Treatment: The reasons given by the patients who discontinued treatment themselves are instructive. Medical treatment differs from surgical treatment in that continuing medical benefit is dependent upon continuing cooperation by the patient, who must continue taking the drug. Of the 14 patients who had not had sympathectomy, one discontinued therapy after two days at home because of hypotension and 5 tried the drug irregularly for one to two months and then discontinued it without a direct complaint concerning effects or side-actions. One discontinued therapy at four months because of difficulty of regulation in spite of careful trial. Three discontinued therapy at four to seven months in order to try a diet or Rauwolfia. One discontinued therapy at 10 months because she had moved and another at 40 months because she planned to move. One discontinued therapy at 15 months because he felt weak with reduced blood pressure, and another stopped at 25 months because of a rectal operation necessitated by a fissure in ano that had been aggravated by constipation. At the present time 13 of these 14 patients are living; one died of cardiac failure. Three developed nonfatal complications a few months after stopping use of hexamethonium; these complications were a cerebral vascular accident in two and cardiac failure in one. It is interesting that four who discontinued therapy have maintained a satisfactory reduction of blood pressure without the drug. Of the 38 patients who had had sympathectomy, 5 stopped treatment, each because of increase of symptoms of postural hypotension, weakness, and dizziness. Of these one has since died of a coronary occlusion and another with a cerebral vascular accident.

Medical Reasons for Discontinuing Treatment: Reasons for medical recommendations that patients discontinue hexamethonium were usually related to the severity of the hypertensive vascular disease. Of the 77 patients who had not had sympathectomy, 22 were advised to stop therapy with the drug. Seven of the 22 have since died. In two of the seven, hexamethonium had been discontinued because of mental deterioration; one died in an institution and the other died of a coexisting fibrosarcoma. Sympathectomy was tried in five, splanchnicectomy in three, and "total" sympathectomy in two because of progressive increase of blood pressure and of symptoms. Death of these five patients was caused by cerebral vascular accidents in two and by renal failure in three. Fifteen of the 22 patients who were advised to discontinue therapy are now living. Because of progression of hypertension, hexamethonium was followed by "total" sympathectomy in four patients with moderate improvement, by removal of a contracted kidney in one with some improvement, and by unilateral adrenalectomy in another without improvement; the second stage was refused. Two patients were placed on a rice diet with some benefit. Of the remaining seven, therapy was discontinued in two because of episodes of diarrhea with lower abdominal distress, in three because of mental inadequacy with inability to understand and cooperate in their instructions, and in two because of marked depression necessitating transfer for psychiatric care. These patients are of particular interest in that they had not received any Rauwolfia preparations and yet were as acutely depressed as the two patients to be described in the section on Rauwolfia. Among the 38 patients who had had sympathectomy before trial with hexamethonium, 5 stopped taking the drug on medical advice. The reason was mental deterioration in two, development of a "brittle" response in two, and reduction of blood pressure maintained without the drug in one. It is evident that reasons for discontinuing hexamethonium therapy by patients or by doctors have seldom been related to the side actions of the drug.

TABLE 1.—*Symptoms of Hypertension in Thirty-Seven Patients Before and During Hexamethonium Therapy*

Symptoms	Before Treatment			During Treatment *	
	Mild	Moderate	Severe	Mild	Moderate
Headache	14	10	4	17	..
Fatigue	23	5	..	10	1
Dizziness	20	2	..	7	..
Palpitation	15	..	..	6	..
Dyspnea	13	..	..	2	..

* There were no severe symptoms during treatment.

Effect on Symptoms of Hypertension: The effect of hexamethonium on the symptoms of hypertension is given in table 1. In the interest of brevity no detailed mention will be made of the relief of symptoms in the group who had had sympathectomies, those patients whose blood pressures are graphed in figure 3. For convenience the 17 patients referred to in figure 2 and the 20 patients of

figure 3 will be considered together as a group of 37. The symptoms recorded are those noticed by the patient a few weeks before treatment and those noticed during the last two or three office visits while the patient was receiving hexamethonium only. Known duration of hypertension before treatment varied from 1 to 26 years, with an average of 9.6. Four of the 37 patients gave a history of hemiplegia; 3 had had a massive retinal hemorrhage. One gave a history of coronary occlusion and another of congestive failure, but their electrocardiograms were essentially normal when treatment was started. Ten had been hospitalized elsewhere for a week or more because of high levels of blood pressure and associated symptoms. Except for the recurrence of one massive retinal hemorrhage and of one cerebral vascular accident each during the second year of treatment, these complications have not recurred. The dose of hexamethonium for these 37 patients varied from 1 to 5 gm. a day, with an average of 2.8. Thirteen of the 37 have adjusted the distribution of tablets during the day to take a smaller number before breakfast and lunch and a larger number before dinner and at bedtime. They have thus minimized symptoms of side-actions and of hypotension that had been most noticeable during the morning.

TABLE 2.—*Symptoms Caused by Hexamethonium in Thirty-Seven Patients*

Symptoms	Mild	Moderate	Severe	None
Constipation	9	6	6	16
Blurring of vision	15	7	..	15
Dryness of mouth	18	3	..	16
Slow micturition	11	2	..	24
Epigastric discomfort	5	2	..	30
Transient hypotension	13	5	..	19

Symptoms Caused by Hexamethonium: The symptoms caused by hexamethonium are presented in table 2. For this table constipation was considered mild if a bowel movement occurred each day with use of a laxative not oftener than once a week, moderate if a laxative was used two or three times a week, and severe if cathartics were required. Blurring of vision was considered mild when noticed for an hour or more every few days and moderate when some difficulty was noticed each day. Dryness of mouth, slowing of force of micturition, and epigastric discomfort with nausea were similarly classified as mild or moderate according to degree of difficulty and frequency of occurrence. Transient episodes of weakness were caused by hypotension and usually required a few hours of rest. These episodes were considered as mild if they occurred less often than once a month and moderate if they occurred oftener. In considering table 2 it must be remembered that each patient had been instructed to regulate the dose of hexamethonium until symptoms of side-actions of the drug were noticed at least occasionally and to skip or reduce doses when the side-actions were troublesome. The occurrence of side-actions of hexamethonium at least occasionally is evidence that the dose is adequate; changes of blood pressure have been a less reliable guide. Although side-actions were inconvenient, they were not considered a serious handicap by patients.

Evaluation: In addition to reduction of blood pressure and relief of symptoms, there has been some evidence of improvement of hypertensive retinitis and of decrease of heart size. Evidently hexamethonium orally can reduce blood pressure and relieve symptoms to an extent that approaches but does not equal that of "total" sympathectomy.

Pentolinium Tartrate.—Fourteen patients were hospitalized between January and August, 1954, for trial of pentolinium. Three developed "brittle" responses, with marked fluctuations of blood pressure up to levels as high as their control values and down to levels low enough to cause prostration. In these three patients therapy with the drug was not continued. At this time the significance of delay of gastric emptying (fig. 4) and the need for spacing doses at longer periods was not known. Delay of gastric emptying can delay transit of the tablets to the intestine for absorption. Doses were given before meals and at bedtime.

In 11 patients pentolinium therapy was continued after they left the hospital. Each experienced troublesome fluctuations of blood pressure. Six discontinued therapy at 1, 4, 8, 9, 19, and 21 weeks, respectively, five because of difficulty in regulating the effects and one because she "does not feel that she needs any medicine." One patient discontinued therapy after 11 months because of absence of either effects or side-actions of the drug, although the dosage was 3.2 gm. a day. One patient developed a massive coronary infarction after four months; he recovered, but use of the drug was stopped. The remaining three patients are continuing on treatment at 9, 10, and 12 months, using doses of 0.5, 1.0, and 1.8 gm. a day. They have had some relief of symptoms, but their blood pressures have fluctuated, with a variable postural hypotension and alternating rise and reduction in the supine position. Blurring of vision has been a frequent inconvenience with this drug; it often lasted throughout the day and prevented reading or fine work. The total dose each day for the 11 patients varied from 200 mg. to 3.2 gm., with an average of 1.03 gm.

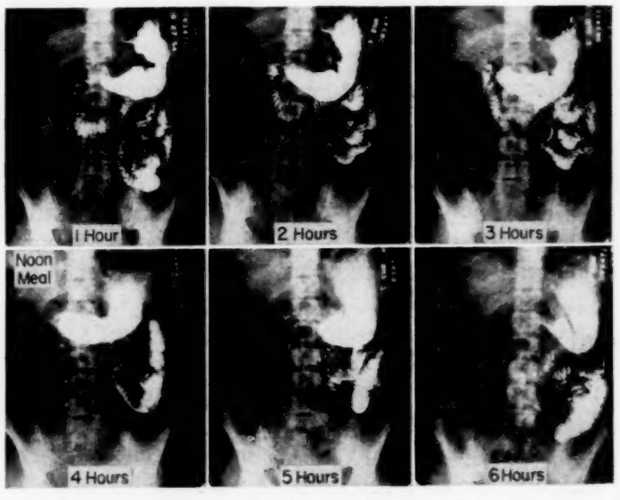

Fig. 4.—Delay of rate of gastric emptying demonstrated by hourly roentgenograms starting two hours after taking 200 mg. of pentolinium tartrate and one hour after ingestion of barium. Between the third and fourth films a light meal was taken.

It is recognized that these discouraging experiences represent too small a group of patients for any final conclusions. This series was discontinued because of our greater interest in Ecolid.

Ecolid.—Twenty patients have been hospitalized since Oct. 15, 1954 for trial of Ecolid. Ten had not used a ganglion-blocking drug previously, and 10 had used hexamethonium a year or more. Because of the long duration of action of Ecolid, in most patients therapy was started with a single dose orally in the morning, an hour before breakfast. The amount was adjusted until some reduction of supine blood pressure, postural hypotension, and side-actions occurred; it varied from 50 to 200 mg., usually 50, 75, or 100 mg. Blurring of vision was a frequent inconvenience and often lasted all morning or both morning and afternoon. Barium ingested an hour after a morning dose of 100 mg. was usually retained in the stomach six hours or longer.

After regulation on a morning dose only, several divided dose schedules were tried. Additional doses given during the day did not produce any recognizable added effects or side-actions. Variations of dose schedule were also tried on an ambulatory basis until it became evident that a dose a half-hour or an hour before breakfast and another an hour and a half after dinner or at bedtime was the most satisfactory. The morning dose for these patients at the present time ranges from 25 to 250 mg., average 75; the evening dose from 25 to 250 mg., average 81.2. Seven patients take the smaller morning dose to minimize the blurring of vision that would otherwise interfere with their work.

Oral initial test doses of Ecolid, 50 or 100 mg., reduced supine blood pressure for 12 to 29 hours.[7] This reduction is more extensive, more consistent, and for a longer time than that of any other drug similarly tested and any drug included in this report. However, it has been difficult to maintain consistent reduction of blood pressure in the supine position with subsequent doses. During continuing treatment fluctuations of blood pressure occurred. Reductions occurred after most doses and lasted about twice as long as those observed with pentolinium. Of the drugs described in this report, initial test doses of pentolinium tartrate orally, 200 or 400 mg., approached the consistency and the extent of the hypotensive effects of Ecolid but not the duration. Hexamethonium orally, as an initial dose of 1 gm., seldom caused any reduction of blood pressure. Single oral doses of the other drugs that have been mentioned had less or no effect.

Each of the 20 patients given Ecolid was discharged still receiving treatment; no "brittle" responses interfered. Of the 10 who had no previous experience with a ganglion-blocking drug, 8 continue the use of a dose before breakfast and another at bedtime. They are satisfied in that the relief of symptoms and the fluctuating reduction of blood pressure compensated for the inconvenience of the side-actions. Of the two who discontinued therapy, one decided not to take any medicine. The other developed symptoms of angina on effort, with periods of hypotension. He was advised to stop. The 10 patients with previous experience using hexamethonium continue their treatment. Each prefers Ecolid and gives greater energy, improved appetite, and less difficulty with constipation as reasons. Several of these patients have learned to take their blood pressures at home. There is, unquestionably, a reduction of pressure at times of maximum drug action, but it is not yet certain whether the average reduction is equal to that recorded when the patients were taking hexamethonium. Relief from symptoms of hypertension has been equal. It is recognized that the group of patients taking Ecolid is too small and the follow-up too short for any final conclusions.

Hydralazine Hydrochloride.—Thirteen patients were hospitalized between January and April, 1949, for trial of hydralazine. The initial doses ranged from 25 to 100 mg. and were given at four-hour intervals. Reduction of blood pressure in the hospital was inconsistent. Only three patients continued therapy after leaving the hospital, for 11, 19, and 33 days respectively. Reasons for discontinuing therapy were failure of reduction of pressure or occurrence of nausea, headaches, and vomiting. Trial of hydralazine with hexamethonium will be listed under the section on Combined Drug Therapy.

Alkavervir.—Seventeen patients were hospitalized during 1950 for trial of alkavervir. In the hospital and on an ambulatory basis the oral dose was gradually increased until nausea and occasionally vomiting occurred. The dose was then reduced slightly and adjusted just below the amount that produced these symptoms. Treatment continued 5 to 10 months, and the daily dose ranged from 10 to 18 mg., with an average of 14 mg. A moderate reduction of blood pressure occurred in three patients and some relief of headache without reduction in two. Treatment was discontinued, since results were not impressive.

Rauwolfia Serpentina and Reserpine.—Riker 1070, Rauwolfia crude drug, or the Ciba and Squibb preparations of reserpine have been given to 16 patients for 1 to 10 months. Occasionally a moderate reduction of blood pressure occurred, never a significant reduction. Pulse rate usually decreased toward 60 to 68 beats a minute. The maximum initial dose was two tablets of Riker 1070 (each tablet the equivalent of 250 mg. of the crude drug) or four of reserpine, 0.25 mg. each, daily. Minimum maintenance dose was a tablet of Riker 1070 or 0.25 mg. of reserpine daily. No difference was noted between effects of Rauwolfia or reserpine. These patients seemed sedated and lacked their usual interest and zest for living. Therefore, Rauwolfia or reserpine are no longer used alone for hypertension and seldom in combination. Seven patients described nightmares, and two stated that they felt "awful bad" while taking it.

Combined Drug Therapy.—Combination of two drugs has not been employed as initial treatment for patients with hypertension, since the primary plan of this study has been evaluation of each drug alone. Following this plan, it was determined that hexamethonium orally was definitely the most effective single agent. It was then necessary to test use of another drug with hexamethonium.

Since January, 1952, hydralazine hydrochloride therapy has been added to therapy with hexamethonium in 18 patients whose reduction of blood pressure with hexamethonium had not been considered satisfactory. The dose of hydralazine varied from 100 to 450 mg. a day, with an average of 157, and the period of trial extended from 3 to 36 months, with an average of 15. In most patients, there was no added reduction of blood pressure or relief of symptoms. In a few there was an increase of postural hypotension that necessitated reduction of the dose of hexamethonium. The dose of hexamethonium could be raised again when hydralazine therapy was discontinued. One patient developed an unexplained anemia and another mild joint pains. For each use of the drug was promptly discontinued. The 18 patients are now taking hexamethonium alone.

Since January, 1954, 10 patients have been started on a regimen of reserpine with hexamethonium. The initial dose varied from 0.5 to 1.0 mg. a day and the maintenance dose from 0.25 to 1.0 mg., with an average of 0.5. Three described some lessening of constipation. One experienced moderate additional reduction of blood pressure, but at five months he was obviously oversedated and maintained an impassive and dull expression. One, similarly oversedated, had no reduction of blood pressure. Another, after taking 0.5 mg. daily for five months, became emotionally depressed and lethargic. She stated that she "did not want to live at all" and "had not been able to sleep for a week." Psychiatric help was obtained, but for three weeks after discontinuing therapy she continued with her sleeplessness and lethargy before improving. She had not previously experienced any depression. Another patient who had not used hexamethonium became depressed. She had a previous history of depression but was given reserpine, 0.1 to 0.25 mg. per day for a month, because of nervousness and headaches. She discontinued therapy because of nasal congestion. A week later she was admitted to a sanatorium for a month of psychiatric care. The headache had occurred 11 years after a "total" sympathectomy, even though blood pressure was normal. These experiences have discouraged use of reserpine with hexamethonium.

PRINCIPLES OF THERAPY

Wide differences of opinion exist concerning choice of drugs and arrangements of dose schedules for hypertension. Some of these differences of opinion occur because of use of different methods of study and different types of patients. Treatment of patients who are already in an advanced stage of the hypertensive disease process with severe cerebral, renal, or cardiac vascular damage must differ from that for others. For these patients the parenteral administration of small doses of hypotensive agents, often hexamethonium, along with dietary restrictions, sedation, and other measures is preferred by many authorities. These difficult problems are not primarily considered in this report. Nevertheless, it is evident that the oral effectiveness of pentolinium tartrate or of Ecolid might permit substitution of oral medication for injections. Curves of reduction and rise of blood pressure with these two drugs are slower but otherwise resemble those after injection of hexamethonium. Small or minimal effective divided oral doses of these two ganglion-blocking drugs can be used without significantly delaying the rate of gastric emptying.

Treatment of the patient with early mild or labile hypertension also varies widely. Some authorities advise observation and reassurance without medication; others advise sedation by barbiturates or use of the extensively advertised "mild hypotensive" drugs such as hydralazine, alkavervir, or Rauwolfia and reserpine. In this choice the physician must carefully consider the risk of toxic reactions—the lupus-arthritis syndrome for hydralazine, the less serious nausea and vomiting caused by alkavervir, and the depressions and other unpleasant mental changes that are experienced by some patients using Rauwolfia or reserpine. The physician must also recognize the difficulty of determining whether any observed reduction of blood pressure is a specific effect of the drug or a nonspecific effect of reassurance and limitation of activities. Hypertension is ordinarily a slowly progressive disease and both observation and treatment must continue many years. Although hexamethonium is the least toxic of these drugs, its use in mild hypertension has not been generally advocated because of inconveniences caused by its side-actions.

Determination of Dose.—For patients in an advanced stage of hypertension and those in an early mild stage, the problem of determining the subeffective, minimum effective, and maximum effective dose is important. Use of a subeffective dose is a false security and an unnecessary expense to the patient. The range between the minimal and the maximum effective doses is small. For the purpose of this study of patients with moderate to severe hypertension, maximum effective doses were employed, with the side-actions of a drug as well as its effects on blood pressure as guides. Of the drugs tried, the best results were obtained with hexamethonium. The great majority of hypertensive patients treated by physicians fall between the extremes of severe and mild and are considered as having moderately severe to severe hypertension. Additional comments on therapy will therefore largely relate to the oral use of ganglion-blocking or suppressing drugs in patients with moderately severe to severe hypertension.

Cholinergic Drugs.—Neostigmine (Prostigmin) bromide, bethanechol (Urecholine) chloride, and other similar cholinergic drugs exert an effect opposite to the ganglionic suppression caused by hexamethonium, pentolinium, and Ecolid. They deblock the ganglions. The suppression of sympathetic nerve conduction through ganglions is caused by an antagonist action to acetylcholine. Normally, repetitive impulse transmission through the ganglions is possible because of periods of rapid build-up of acetylcholine alternating with periods of its quick hydrolysis by the enzyme cholinesterase. Neostigmine inhibits cholinesterase and thus accentuates the action of acetylcholine. Cholinergic agents are, therefore, antidotes to parasympatholytic and ganglion-blocking drugs. They are not agents to be used conjointly just to overcome constipation. This purpose can be achieved by prescribing simple laxatives or cathartics as necessary.

Effect of Ganglion-Blocking Drugs on Gastric Emptying.—Effective doses of ganglion-blocking drugs delay the rate of gastric emptying. This must be considered in arranging a dose schedule. Because of their relatively poor absorption, hexamethonium tablets given before meals and at bedtime will be gradually transported into the intestine and gradually absorbed day and night. Excessive drug actions associated with accumulation in the intestine will occur infrequently and will cause only minor inconvenience if patients are taught to skip doses when symptoms first appear. Some patients avoid postural weakness in the morning by using smaller amounts of the drug before breakfast and lunch and larger amounts before dinner and at bedtime. Obstipation must be avoided by use of laxative foods, mild laxatives, or cathartics if necessary.

The delay of gastric emptying is a greater problem with use of pentolinium or Ecolid. Slow continuous transportation and absorption can be obtained by giving small doses at frequent intervals. However, this defeats the main advantage of these drugs, that of their prompt oral effectiveness. Also, gradual absorption does not achieve the peak of drug effect upon which maximum reduction of blood pressure evidently depends. The recommendations of Maxwell, Smirk, and others, and our observations, favor a first dose during the day given as soon as the patient rises in the morning, a half-hour or more before breakfast. Thus, a smaller amount of the drug is required and the best reduction of blood pressure is achieved. Experimental evidence and clinical observations indicate that once a maximum effect is achieved subsequent doses within a few hours will have little or no effect. It is therefore evident that subsequent doses during each 24 hours should be spaced in accordance with the duration of action of the drug, every 8 hours for pentolinium and every 12 hours for Ecolid. With this schedule a normal bowel movement usually occurs early in the morning or occasionally at night.

Evaluation.—Results with Ecolid have been definitely more encouraging than those with pentolinium. However, until further evidence concerning these two newer drugs accumulates, hexamethonium orally remains a well-substantiated treatment for most patients with progressive hypertension. No patient taking hexamethonium has developed any abnormalities evidenced by repeated blood cell counts and examinations of urine or suggested by any sign or symptom of drug toxic effects. This drug is readily available through several companies at a relatively low cost. Development of increasing or acquired drug tolerance has been reported, particularly by those who use ganglion-blocking drugs parenterally. Unquestionably, certain patients using hexamethonium orally will have their greatest reduction of blood pressure during the first weeks of treatment. A subsequent rise of pressure with continuing treatment could be caused by a readjustment of the complicated mechanisms that are responsible for hypertension, this to compensate for the suppression of the neurogenic factor by the drug. The rise is not regularly associated with a significant decrease of side-actions of the drug or need for increase of dose. Acquired drug tolerance in the strict pharmacological meaning has not been a problem for any of the drugs employed orally in this study.

It is recommended that new patients with hypertension be first treated with a single agent and that the amount be regulated to determine the effective dose. Later a second drug might be added if necessary. It is important that careful instructions be given each patient with regard to limitation of work load, increase of hours of rest and relaxation, regulation of weight, and other general precautions. If sympathectomy is indicated, this should be explained to the patient as an advisable procedure, if a satisfactory control of blood pressure cannot be achieved otherwise. This is important, since in each series of patients a disappointingly great number have stopped their medical treatment. Results of use of hexamethonium have approached but not equalled those of "total" sympathectomy.

SUMMARY AND CONCLUSIONS

Therapy with hexamethonium was employed in 115 patients with hypertension; therapy with pentolinium tartrate (Ansolysen) in 14; Ecolid [4, 5, 6, 7-tetrachloro-2-(2-dimethylaminoethyl) isoindoline dimethochloride], which was known experimentally as Su 3088, in 20; hydralazine (Apresoline) hydrochloride in 13; alkavervir (Veriloid) in 17; and Rauwolfia serpentina and reserpine in 16. Of the drugs tested, the efficacy of hexamethonium orally has been best substantiated by reduction of blood pressure and relief of symptoms.

Treatment of Rheumatoid Arthritis.—It is clear from long-term studies that active rheumatoid arthritis can neither be kept suppressed nor prevented from progression with ACTH and cortisone, the proportion of failures in four years being approximately 95 per cent. . . . While it is true that phenylbutazone shows a somewhat lower failure rate than ACTH and cortisone, in peripheral rheumatoid arthritis the rate is still fairly high. . . . These results should not be taken to mean that cortisone and ACTH have no place in the treatment of rheumatoid arthritis. They do indicate that maximum suppressive doses will end in failure and that the acute, relatively early disease is the type least suitable for ACTH and cortisone. The results with minimum doses of cortisone and ACTH indicate that, in the less violent type of disease, a very good result as far as rehabilitation is concerned can be obtained. . . . It appears likely that cortisone and ACTH may in some fashion interfere with the normal processes of immunity of repair. Furthermore, one cannot pass lightly over the psychological problems and emotional disasters associated with such an experience. For a painfully crippled patient to be returned to near normal within a few days, only to be obliged as months go by to preside over his own disintegration, is a soul-shaking experience for any patient and his physician. If every patient with rheumatoid arthritis were first placed on a full basic program, the temptation to rush in with more dramatic treatment would be much reduced. When the need arises for a patient, who is on a full basic program, to have additional treatment a very careful evaluation can then be made to determine which of the various elective procedures, such as gold, ACTH, cortisone, phenylbutazone and many others, is most suitable for this individual patient.—W. P. Holdbrook, M.D., Cortisone, ACTH and Phenylbutazone in Long-Term Therapy of Rheumatoid Arthritis, *Medical Clinics of North America*, March, 1955.

FACTORS AFFECTING PAIN OF INJECTION

Janet Travell, M.D., New York

This subject of pain from injections is one with which most adults have had intimate experience. On questioning a professional audience, I found that only one person in a hundred had never received a hypodermic injection of a medicine, vaccine, or test material. Furthermore, of those who had had an injection, only about 10% said they did not dread the next one. If persons were conditioned perfectly to the piqûre, there would be no unpleasant associations with it. But it is a sad commentary on current techniques of injection that so many persons have painful memories. Fear of the needle is usually acquired in childhood.[1] The psychic trauma to millions of the population produced in this way undoubtedly creates obstacles to good doctor-patient relationships, essential diagnostic procedures, and even life-saving therapy.

IMMEDIATE PAIN OF INJECTION

Attention has generally been focused on how to control pain of injection by rendering the parenteral solution free from local irritant properties.[2] The popular notion is taken for granted "that some pain is to be expected from the mere jab of the hypodermic needle." [2] I take exception to this notion. Given a nonirritant solution, pain of injection is not inevitable. Presently I will describe how a painless hypodermic injection can be made.

The different causes of immediate pain of injection are: (1) local irritation, due either to the antiseptic on the skin or to the parenteral solution (acidity or alkalinity, hypertonicity or hypotonicity, or chemical action); (2) mechanical trauma, which may have a twofold origin either in the needling, or in sudden distention of the tissues by rapid introduction of fluid; and (3) abnormal sensitivity of the tissue at the site of the injection, either of the skin or skeletal muscle. In the case of the former, it is easy to show that a physical stimulus hurts more in an area of cutaneous hyperalgesia than when it is applied to normal skin.[3] It can also be demonstrated that when a muscle is tender to deep pressure, inserting a needle into the area of deep hyperalgesia causes a great deal more pain than when it is inserted into nontender areas of the muscle.[4] Unlike the skin, normal muscle is practically insensitive to a needle. In treating patients with pain syndromes, I have tested this repeatedly, needling many muscles of the body. There are many measures to reduce the immediate pain of hypodermic injection.

Cutaneous Pain.—Occasionally one strikes a "dead spot" in the skin, and the usual sharp pricking pain is not felt. This is because the distribution of sensory nerve endings is punctate and a fine needle may pass between the receptors. This fortuitous circumstance is not predictable. Some physicians try to minimize skin pain by distracting the patient or substituting a stronger stimulus for the pricking pain, for instance by pinching or slapping the skin just as the needle is inserted. A recent attempt to combat pain of injection is by means of the hypospray, in which tiny particles of solution are ejected at high speed from a special apparatus. With this type of drug administration, skin pain is reduced, but not eliminated.[5] At present, the hypospray possesses limitations in practical usage, concerning the depth of injection and the type and volume of material that can be administered. Also, bleeding and ecchymosis are apt to occur.

A more convenient procedure to eliminate skin pain is the application of cold. Refrigeration anesthesia effectively blocks nerve conduction when the deep temperature falls to about 10 C (50 F); sensory fibers are blocked sooner than motor fibers. Interruption of conduction at this temperature has been maintained for hours without damage to nerve tissue.[6] Years ago, I utilized cold to prevent skin pain by applying a cube of ice, on and off, during a few minutes. Later, I employed the technique of briefly spraying the skin with ethyl chloride just before inserting the needle, and for a long time I have used a refrigerant spray as a regular practice. Certain of the halogenated hydrocarbon sprays have an advantage over ethyl chloride in not being flammable. Figure 1 shows changes in skin surface temperature when ethyl chloride or a mixture of halogenated hydrocarbons was sprayed on the volar aspect of the forearm. The temperature was recorded at two-second intervals, using iron-constantan thermocouples. The spray dispenser was held at a distance of 6 in. from the skin, and the spray was applied continuously for two seconds. The two coolants were sprayed through the identical nozzle so that the volume delivered per unit of time was essentially the same. The mixture "Formula A" (consisting of 15% dichlorodifluoromethane and 85% trichloromonofluoromethane)

From the Department of Pharmacology, Cornell University Medical College.

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Ethyl chloride spray was supplied by the Gebauer Chemical Company, Cleveland.

The halohydrocarbon mixture (Formula A) was supplied by Wyeth Laboratories, Philadelphia.

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was arbitrarily prepared so as not to cool the skin quite as much as ethyl chloride; after the former, the temperature of the skin surface fell to –4 C (24.8 F), and after ethyl chloride to –9 C (15.8 F). In neither instance did the subject report pain due to cold, nor did frosting occur.

By pricking the skin with a 22 gauge needle at intervals during the course of such experiments, it was determined that anesthesia to the passage of the needle through the skin is present when the temperature recorded from the skin surface in this way drops to 0 C (32 F) or less after two or three seconds of spraying. Recovery of the temperature is extremely rapid (fig. 1), and anesthesia lasts only two or three seconds. These observations indicate that one must have cleaned the skin site and must have the syringe handy for injection when the spray is applied. The injection should be made at the instant that the material evaporates and the skin appears dry. This whole process of preventing skin pain costs only five or six seconds of time, and one or two cents worth of material. No concern should be felt over loss of antisepsis due to spraying, since such volatile coolants are considered safe for application directly to burns and open wounds. Local cold to inhibit cutaneous pain responses to injection has been applied by means of a cooling unit that provides a temperature of 5 C (41 F).[7] The cooled tip of the instrument must be kept in contact with the skin for 45 to 60 seconds to induce anesthesia to pricking pain, but may itself cause cold pain. This procedure does not prevent the pain of an intradermal injection.[7b]

On the other hand, if a rapidly cooling, volatile spray is applied for two or three seconds, the skin pain of an intradermal, subcutaneous, intramuscular, or intravenous injection may be entirely eliminated, while at the same time no cold pain is produced by the spray.

To eliminate skin pain, I advise attention to the following rules. 1. Use a sharp needle with no barbs, which has the smallest possible diameter compatible with the viscosity of the solution to be injected. Test the point of the needle with a piece of sterile cotton just before use. 2. If a volatile antiseptic, such as alcohol is employed to cleanse the site, allow it to evaporate fully before making the injection. If the needle is inserted through a wet film, it carries some of the antiseptic solution with it into the skin, and this may cause local irritation or urticaria. 3. Apply a cooling spray to the site for two or three seconds before injection, and at the instant that the liquid disappears, quickly insert the needle through the skin.

Subcutaneous Pain.—Subcutaneous tissues are relatively insensitive to the movement of a needle, unless the fascia of the underlying muscle is entered and pulled. Once the skin has been penetrated, the subcutaneous injection of a nonirritant material, such as morphine sulfate or meperidine (Demerol) hydrochloride in a buffered isotonic solution, at room or icebox temperature, does not cause discomfort. This fact becomes more striking if a placebo dose of distilled water is injected instead; the hypotonicity of this "sterile hypo" results in real pain, and the patient is neither pleased nor fooled. When an irritant material is injected subcutaneously, pain is induced. The addition of a local anesthetic to the solution reduces, but does not entirely eliminate, the immediate pain response from the subcutaneous tissues.[8]

Venous Pain.—If the skin site is sprayed with a volatile coolant, and if a sharp needle is neatly introduced into the vein, a minimum of pain results from puncturing the vessel wall. Most of the pain of the inept intravenous injection arises from poor identification of the course of the vein beforehand and failure to check its patency. If a locally irritant solution must be injected intravenously, a slow rate of injection permits its dilution by the blood stream and avoids pain from the vessel wall. Slow injection also gives the patient time to warn the physician promptly if there is leakage of the solution outside the vein.

If pain is due to extravasation, as a prophylactic measure against sloughing it is wise to dilute the material in the tissues by subcutaneous injection of physiologic saline or preferably procaine, provided there is no idiosyncrasy to this drug. In the case of thiopental (Pentothal) sodium or other strongly alkaline solutions, a 1 or 2% solution

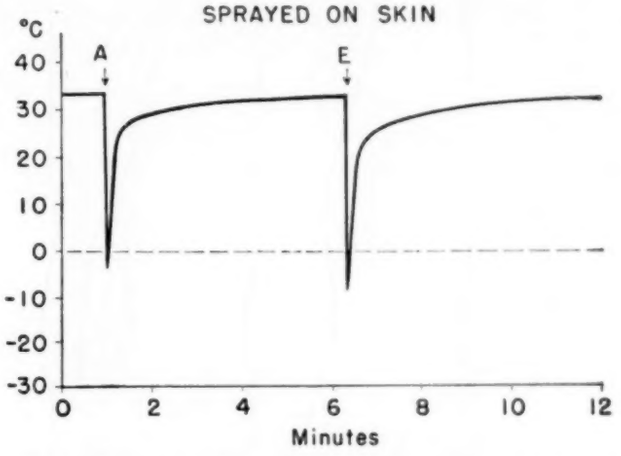

Fig. 1.—Temperature of skin surface recorded at two-second intervals by iron-constantan thermocouples. The volatile coolant was applied continuously for two seconds, starting at the arrow. *A*, "Formula A," which consists of 15% dichlorodifluoromethane and 85% trichloromonofluoromethane. *E*, ethyl chloride.

of procaine hydrochloride as a local antidote has three virtues in that it (1) dilutes the irritant material; (2) acts as a local anesthetic, and (3) tends to neutralize excessive alkalinity, because it is somewhat acid.

Muscular Pain.—I have already indicated that the normal muscle mass is practically insensitive to dry needling. Hypersensitive areas in muscles, however, are frequent. In a limb that is the seat of chronic pain, areas of exquisite tenderness usually develop in the muscles of the region. When these spots of deep hyperalgesia are stimulated by direct pressure or by insertion of a needle, referred pain is set off at a distance; therefore, they are

7. (*a*) Ingraham, F. D.; Watson, D. D., and Woods, R. P.: Inhibition of Cutaneous Pain Responses by the Local Application of Cold: A Simple Method of Reducing Pain of Hypodermic Injections, New England J. Med. **237**: 773-776 (Nov. 20) 1947. (*b*) Mueller, H. L.: The Practical Use of a Cooling Device to Inhibit the Cutaneous Pain of Hypodermic Injections, ibid. **248**: 692-693 (April 16) 1953.

8. Hesselvik, L., and Ericsson, H.: Active Basal Immunity and Its Application to Epidemiology: IV. Initial Pain in Diptheria-Tetanus-Pertussis Vaccination, Acta pædiat. **43**: 22-26 (Jan.) 1954.

known as trigger areas.[9] When a drug is being administered intramuscularly, if the needle penetrates such a trigger area the patient is certain that the needle has "hit a nerve," because of the referred pain induced.[4b] It is not difficult to recognize such clinically active trigger areas if one carefully palpates the muscle before injecting the material. In this case, the examiner finds exquisite deep tenderness, referred pain, and hypercontractility, or a visible twitch, of that part of the muscle that contains the trigger area when it is rolled beneath the fingers. With training, he will also readily detect that the region of the trigger area is more resistant than the surrounding muscle. Latent, or clinically silent, trigger areas [4] may be recognized in the same way by a change in the consistency

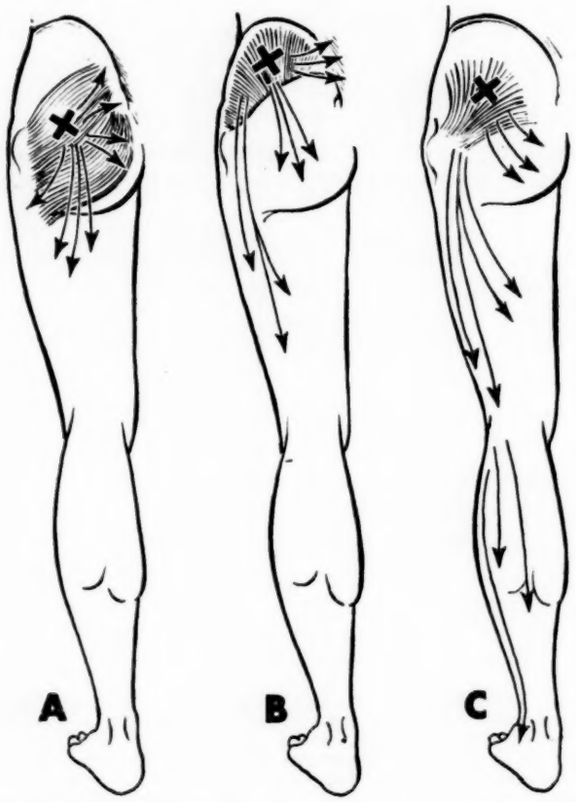

Fig. 2.—Distribution of referred pain evoked by needle when inserted into trigger areas (*X*) located at common sites of intramuscular injections. Referred pain is most intense in region of arrowheads. *A*, gluteus maximus muscle. *B*, gluteus medius muscle. *C*, gluteus minimus muscle after removal of gluteus maximus and medius muscles.

of the muscle, a twitch response, and deep tenderness, even when referred pain is not induced by pressure. Latent trigger areas probably represent the burnt-out residues of previous muscular injuries; they no longer give rise to spontaneous pain but are still capable of setting off referred pain if precisely hit by a needle.

The pain reference patterns of those portions of the gluteal muscles that serve as common sites for intramuscular injection are shown in figure 2. "Deep" gluteal injections are sometimes made into the gluteus minimus muscle. The resemblance of the gluteus minimus patterns [9b] to the pain distribution of sciatic neuritis or nerve root pressure, as in the intervertebral disk syndrome, is obvious. Trigger areas should be avoided in making intramuscular injections not only because of the immediate pain but because of a more serious problem that may arise if an injection into a latent trigger area activates it clinically and thus leads to a pain syndrome of severe "sciatica" or other "neuralgia" that lasts for months. Both the gluteus medius and gluteus maximus muscles are less prone to develop trigger mechanisms than is the gluteus minimus muscle, and for that reason, the former are preferable as injection sites. Similarly, of the shoulder-girdle muscles, the deltoid is the least likely to develop these abnormal foci of pain. Perhaps this is why the deltoid and gluteus maximus muscles have been selected throughout the generations to receive most intramuscular injections.

When an irritant solution is injected into either normal or hypersensitive muscle pain results. To minimize this, procaine or some other local anesthetic has occasionally been added to the parenteral solution. This procedure has been criticized as illogical,[2] but we have found that it does reduce pain materially.

The table shows the results of 39 tests on five subjects carried out quite a while ago by Dr. Nolton H. Bigelow and myself. Injection into the nontender deltoid muscle of a 5% solution of thiamine hydrochloride in a 2 cc. dose caused an intense pain that, on the average, lasted two minutes. When the same volume of 5% thiamine hydrochloride, but containing 0.5% procaine hydrochloride, was similarly injected into the deltoid muscle on another occasion, the duration of pain was reduced about one-sixth, to 20 seconds, which approximated the pain period of distilled water. The intensity of pain was correspondingly decreased. Higher concentrations of procaine (1 and 2%) were somewhat more effective. It is clear, however, that the presence of a local anesthetic in the irritant solution did not entirely prevent immediate pain following its intramuscular injection, just as in the case of the subcutaneous tissues.[8] This is probably because of the time required for conduction block to develop at the site of local irritation. We have also attempted pain prophylaxis by prior injection of a 2% procaine solution into the intramuscular site, but accurate placement of the subsequent solution is difficult and success uncertain.

Because of the greater convenience and safety of the intramuscular as compared with the intravenous route, and because of the greater vascularity and absorbing capacity of the muscles as compared with the subcutaneous tissues, intramuscular injection probably accounts for the majority of parenteral administrations. Therefore, I would like to emphasize the details of technique to avoid pain from an intramuscular injection. 1. Do not use an extremity that is the seat of chronic or recurrent pain. 2. Similarly, use with caution any region of the body that in the past has been the seat of a severe pain syndrome, such as acute calcific bursitis. 3. Preferably use the midportions of the deltoid or gluteus maximus muscles. 4. To avoid trigger areas, select a nontender site in the muscle for injection, which does not twitch or refer pain on palpation. 5. If by chance the muscle does twitch or pain is felt on insertion of the needle, withdraw the needle from the muscle but not out of the skin, and redirect it

9. (*a*) Footnote 4*a*. (*b*) Travell, J., and Rinzler, S. H.: Scientific Exhibit: The Myofascial Genesis of Pain, Postgrad. Med. **11**: 425-434 (May) 1952.

into the muscle at a different angle. 6. Inject the solution slowly into a portion of the muscle that was not painful and did not twitch on insertion of the needle.

DELAYED PAIN OF INJECTION

The chief causes of delayed pain of injection include (1) infection, (2) aseptic irritation and necrosis, (3) antigenic reactions, (4) reactions to pyrogens, and (5) painful muscle spasm.

Infection.—Fortunately, infection is rare, but it may be serious. Epidural spinal abscess has been reported following lumbar puncture with local procaine anesthesia [10]; in this patient, a procaine solution from a covered flask was used.[11] The dangers of multiple dose containers for intramuscular, intravenous, and intraspinal injections have been pointed out.[12]

Cracked or defective glass ampuls have also been a source of trouble. Ampuls may be tested just before use by drawing the tip across a blotter, with slow rotation of the vial; if cracked, fluid is drawn out through the capillary opening and the blotter becomes wet.

*Influence of Concentration of Procaine on Immediate Pain of Intramuscularly Given Vitamin B_1 (5%)**

	Duration of Pain After Injection of Vitamin B_1, Sec.				
Subject	B_1 Alone	Plus Procaine 0.5%	Plus Procaine 1%	Plus Procaine 2%	Distilled Water
1	90	5	6	4	18
	104	8	7	6	..
	113	..	..	7	..
2	155	72	5	4	15
	..	..	7	8	..
3	227	6	17	2	35
4	85	11	8	5	12
	..	..	6	3	..
	..	..	1	..	..
5	42	6	5	5	6
	..	..	6	..	7
	..	..	8	..	..
Averages †	122	20	8	5	17

* A solution of thiamine hydrochloride, 100 mg. per cubic centimeter, was diluted with an equal volume of distilled water or with 1, 2, or 4% procaine hydrochloride. The volume injected was 2 cc.

† When duplicate tests were done on a subject, the average value was used.

Local Irritation.—The chief hazard of injecting irritant materials is inadvertent contact with an imporant nerve trunk, which may result in permanent neurological damage. Disabling peripheral neuritis has been reported following incorrectly placed intramuscular injections.[13] Peripheral neuritis, and also venous or arterial thrombosis, may be complications of the intravascular injection or extravasation of such materials.

Antigenic Reactions.—Aside from the anticipated local reactions, antigenic materials occasionally cause painful sequellae, such as arthritis, arthralgias, myositis, and peripheral neuropathies.[14] These side-effects are unpredictable.

Reactions to Pyrogens.—Since the volume injected in most parenteral administrations is small, it is often not considered essential to render the solution for subcutaneous or intramuscular injection completely pyrogen-free. Certainly, the amount of pyrogens ordinarily injected in this way does not cause fever. However, it is not generally appreciated that pyrogens may cause severe local reactions, especially on intramuscular injection. In experimenting with this, I found that if 1 or 2 cc. of pyrogenic solution is injected into a trigger area, a few hours later intense pain both at rest and on use of the muscle will appear, which may last several days. No attempt was made to quantitate this effect by using standardized solutions of the pyrogenic bacterial polysaccharides; in these tests, freshly distilled water was allowed to stand in a cotton-stoppered flask at room temperature for a few days, sodium chloride was then added to isotonicity, and the solution was sterilized for injection.

Acute Muscle Spasm.—Acute muscle spasm may occur secondary to the activation of a myofascial trigger mechanism by an irritant material accidentally placed in a trigger area. This delayed type of reaction to an intramuscular injection, as well as ordinary muscular soreness, may be largely prevented by routinely applying ethyl chloride or other suitable cooling spray to the region immediately after the injection. Application of the spray for this purpose is made in sweeps according to the intermittent technique for counterirritation, which has been described for relief of painful muscle spasm.[15]

CONCLUSIONS

By attention to specific details of technique, it is possible to render the routine injection of a nonirritant solution by the intradermal, subcutaneous, intramuscular, or intravenous routes virtually painless.

1300 York Ave. (21).

10. Rangell, L., and Glassman, F.: Acute Spinal Epidural Abscess as a Complication of Lumbar Puncture, J. Nerv. & Ment. Dis. **120**: 8-18 (July) 1945.

11. Rangell, L.: Personal communication to the author.

12. Dangers of Multiple Dose Vials for Intravenous, Intramuscular and Intraspinal Injection, in report of the Council on Pharmacy and Chemistry, J.A.M.A. **125**: 208-209 (May 20) 1944.

13. Broadbent, T. R.; Odom, G. L., and Woodhall, B.: Peripheral Nerve Injuries from Administration of Penicillin: Report of Four Clinical Cases, J.A.M.A. **140**: 1008-1010 (July 23) 1949.

14. Kelly, M.: Some Complications and Sequelae of Prophylactic Inoculations, M. J. Australia **1**: 800-804 (June 8) 1946.

15. Travell, J.: Ethyl Chloride Spray for Painful Muscle Spasm, Arch. Phys. Med. **33**: 291-298 (May) 1952; Relief of Pain by Ethyl Chloride Spray, report of the Cornell Conferences on Therapy, New York J. Med. **52**: 1550-1558 (June) 1952.

Strabismus.—Crossed eyes can be corrected at any age, but the best results are obtained before school age is reached. A cross-eyed child may develop a psychological complex because he is different from his friends and for this reason alone treatment should not be delayed. In addition, the chances of developing good binocular vision are better if treatment is started early, as the vision often deteriorates in the turned eye. If there is any doubt in the observer's mind, the child should be referred for investigation. It is even dangerous to neglect crossed eyes in a baby, as the first sign of malignant ocular tumor may be a turned eye. Unfortunately, in some areas the ophthalmologists delay treatment until the child is five or ten years of age. In view of this a special effort is being made to educate the medical profession about the importance of advising early treatment. . . . Most babies do not co-ordinate their eyes in the first few months but they should be using both eyes together at six months. Some children are born with crossed eyes and others become apparent in the first few years of life. A few cases straighten but the majority require some type of treatment. Some cases are very obvious, but in others the eye turns only when the child is tired or sick.—A. L. Morgan, M.D., Strabismus Should Not Be Neglected, *Canadian Journal of Public Health*, February, 1955.

AIR EVACUATION OF PATIENTS WITH POLIOMYELITIS

Major Hal T. Wilson
and
Capt. Gerard B. Schroering, (MC), U. S. A. F.

"Polio patient flown to aid" is the optimistic headline often accompanying news stories. It gives no indication of the many clinical problems associated with the operation. H. C. Hunley,[1] in an isolated article on this subject, pointed out the possible hazards of moving the patient with poliomyelitis by air. Brahdy and Katz [2] emphasized the bad effects of transportation of any type on these acutely ill patients. Nevertheless, those who have means of aerial transport are often asked to move patients having both acute and chronic respiratory embarrassment. The purpose of this paper is to evaluate the effects of aerial transportation on patients who have both acute and chronic respiratory and bulbar involvement. This is a preliminary report summarizing the experience of the School of Aviation Medicine with this problem. A standard method of caring for such patients has been developed to agree with accepted methods used in the several respiratory centers throughout the country. There has evolved, also, a method of detailed clinical observation of such patients during transportation. A third result of this analysis is the extension of the present survey, using the revamped procedures.

TABLE 1.—*Aeromedical Evacuation of 112 Patients with Poliomyelitis*

Year	Total Transported	Diagnosis Confirmed: Acute	Diagnosis Confirmed: Chronic (Post-acute)
1952	65	27	16
1953	25	0	23
1954 (through July 1)	22	0	20
Total	112	27	59

We hope in our final study to be able to answer the following questions: What are the chief reasons for transporting these patients by air? Is air transportation the best means of handling such cases? How can the patient be best prepared for the flight? What clinical methods are necessary for the care of patients requiring support during transportation? It is emphasized that answers to these questions would be applicable to patients with respiratory insufficiency from other causes than the acute or chronic effects of anterior poliomyelitis.

METHODS

Our particular study is concerned with the aeromedical evacuation of patients with poliomyelitis from July 1, 1952, to July 1, 1954. During that time Military Air Transport Service carried by air 112 patients diagnosed as having poliomyelitis (table 1). Ninety-six of these were accompanied by teams from the School of Aviation Medicine. Evaluation was made of the following data. 1. Flight records kept by the flight surgeons provided clues for difficulty during flight. 2. Clinical records from the receiving hospitals were perused carefully and the necessary information extracted. Such information was obtained in detail for 50 patients. 3. Other reports from receiving hospitals were studied. Follow-up letters were sent when it was impossible for us to personally review the records. Requests were made for evidence of complications following flight. Specifically, the presence of fever beginning soon after arrival of the patient, atelectasis, pneumonia, or other events occurring within a few days after flight were all considered as possibly significant.

TABLE 2.—*Types of Acute and Chronic Cases and Complications*

	Bulbospinal	Spinal	Nonparalytic
Total acute cases	9	9	9
Before flight			
Fever present	9	8	6
? fever present	0	0	3
No fever present	0	1	0
Complications during and after flight			
Pneumonia	2	0	0
Atelectasis	2	0	0
Excessive secretions	3	1	0
Death	2	0	0
Total chronic cases *	22	26	1
Before flight			
Fever present	3	1	0
? fever present	1	3	1
No fever present	18	22	0
Complications during or after flight			
Pneumonia	3	0	0
Atelectasis	6	0	0
Excessive secretions	9	0	0
Fever	8	0	0
Death	3	0	0

* Only 49 of 59 chronic cases had adequate follow-up studies.

RESULTS

A portrayal of these cases is best given by dividing them into acute and chronic groups. Considered acute were those cases with evidence of recent onset and progressive disease at the time of transportation by air. All of these were handled during the Texas epidemic of 1952. Only 27 of 36 so designated by attending physicians fulfilled the criteria for diagnosis of anterior poliomyelitis. These criteria included (1) fever and compatible white blood cell count in the spinal fluid, (2) fever and typical asymmetric paralysis, (3) typical paralysis and spinal fluid findings, or (4) all of the above. Types of acute cases and their complications are listed in table 2. Those cases called chronic were all two or more weeks past the onset of disease and showed no sign of progression of paralysis or fever (except those cases with complica-

From the Department of Internal Medicine (Major Wilson) and the Department of Flight Medicine (Captain Schroering), U. S. Air Force School of Aviation Medicine, Randolph Air Force Base, Texas.

1. Hunley, H. C., Jr.: Air Transportation of Acute Poliomyelitic Patients, U. S. Armed Forces M. J. **3**: 1337-1340, 1952.

2. Brahdy, M. B., and Katz, S. H.: Effect of Transportation on Severity of Acute Poliomyelitis, J. A. M. A. **146**: 772-774 (June 30) 1951.

tions). All but one of the latter group showed typical muscle weaknesses with a paralysis that included respiratory muscle involvement or bulbospinal involvement (table 2). Data from both acute and chronic cases show, as expected, that all complications and deaths occurred among the patients with bulbospinal poliomyelitis. Progression of the disease in acute cases in relation to transportation is shown in table 3.

To report a mortality rate of 22% (2 of 9) means little in so few cases; it is worth while to note, however, that the two patients who died were transported after the onset of bulbar signs and without the presence of tracheotomy. Both had difficulties during flight. Death occurred within 24 hours and three days respectively. Patients with residual paralysis from respiratory and bulbar poliomyelitis have been transported in increasing numbers during 1953 and 1954 (table 1). The effect of aerial transportation on patients unable to control respiration and having difficulty in handling secretions can be readily evaluated here. A graphic presentation is given in table 4. From an examination of these clinical observations and follow-up information, three facts are suggested. 1. There is certainly an increase in respiratory difficulty and difficulty in removing secretions during flight. 2. Apparently atelectasis and pneumonia occur more frequently immediately after flight. 3. Three of the stabilized and afebrile patients with chronic poliomyelitis died following aerial transportation, two within two weeks' time.

TABLE 3.—*Patients with Acute Bulbospinal Poliomyelitis*

Case No.	Time in Days from Onset of Acute Illness: Onset Bulbar Symptoms	Time in Days from Onset of Acute Illness: Day of Flight	Flight Data	Respirator	Oxygen	Tracheotomy	Altitude, Ft.	Duration, Hr.	Days After Flight: Complications	Days After Flight: Death
1	5th	6th	Secretions increased; nausea and vomiting	Yes	Yes	6th (following flight)	6,000	3½	1st day: secretions increased; atelectasis; pneumonia	1st day
2	14th	15th	Irregular respiration; cyanosis; 102 F	No	Yes	14th	4,000	2	None	.....
3	4th	4th	Respirations increased; dysphagia; dysphonia; 103 F	No	No	No	4,000	2	None	.....
4	1st	5th	None	No	Yes	No	4,000	1½	None	.....
5	1st	3rd	Respirations weak and increased; 100 F	No	No	6th	5,000	1½	1st day: secretions increased; atelectasis; pneumonia	3rd day
6	7th	18th	Excessive secretions; constant suction; 99 F	Yes	Yes	No	4,000	3	None	.....
7	10th	5th	Nausea; 101.2 F	No	Yes	No	3,000	2½	None	.....
8	16th	2nd	101.6 F	No	No	17th	3,000	1	17th day: pulmonary edema	.....
9	8th	8th	Intercostal tenderness	No	No	No	4,000	1	None	.....
Total 9						4			3	2

COMMENT

Certainly the transportation of patients with acute poliomyelitis causes anxiety and increased muscular effort, both of which require greater oxygen supply to the tissues. Furthermore, separation from expert help in the removal of secretions and respiratory aid makes the occurrence of hypoxia more likely. Both factors may add to the damage already present in the anterior horn cells.[3] The best conceivable reason for aerial transportation of such patients is to speed their arrival at hospitals where respiratory aid can be expertly given. Theoretically, the conditions of dry atmosphere and decreased oxygen tension during flight and the dehydrating effects of administering oxygen and withholding fluids can constitute real hazards for the patient with respiratory muscle weakness and inability to remove secretions. Some confirmation of such dangers can be seen in the review of the records of the School of Aviation Medicine. Acutely ill poliomyelitis patients should not be moved under usual circumstances. Their transfer may be forced, however, by lack of treatment facilities and impending respiratory weakness.[3] If this is the case, the slightest clue to bulbar involvement indicates that tracheotomy should be performed before the patient is moved by air. Voice change, inability to cough, evidence of facial, tongue, pharyngeal, or laryngeal muscle weakness in even the smallest degree must be recognized and acted upon. In our series, two such patients when transported without tracheotomy had increased respiratory difficulty during flight and died shortly thereafter. This does not prove any lethal effect of flight. However, reduced atmospheric oxygen tension plus increased difficulty in removal of secretions can very rapidly augment the effects of insufficient respiration.[4] The specter of emergency tracheotomy under flight circumstances is enough to demand great caution before moving these people.

The care of those with acute or chronic respiratory muscle weakness, especially when accompanied by inability to clear secretions, is a highly specialized art. During transportation an attempt must be made to minimize risks by observing every known feature of this specialized care. Humidified oxygen, the use of a saturated solution of potassium iodide, frequent suctioning with adequate apparatus, intratracheal lavage with isotonic sodium chloride solution, and preflight hydration are all needed for such aerial transportation. If such precautions are taken during transportation of patients with respiratory insufficiency, certainly the prognosis will be better. This is reemphasized when we see that 9 of 22 such patients had some new complication within one to eight days after flight. This does not include those who were moved

3. Blount, R. E.: The Management of Acute Poliomyelitis, Mil. Surgeon **112**: 320-323, 1953.

4. Gray, J. S.: Physiology of Respiratory Obstruction, Ann. Otol., Rhin. & Laryng. **59**: 72-77, 1950.

back to respiratory centers because of the presence of pulmonary complications. The most complete figures for mortality rates in chronic respirator cases are obtained from the National Foundation for Infantile Paralysis. In 1953 the nine respiratory centers handled 317 postpoliomyelitis patients requiring respiratory aid. There were 18 deaths (5.9%). How many patients had bulbar involvement is not known. Whatever the significance of the deaths in our chronic series, certainly there is clear indication that inflight and postflight complications are frequent. This was also observed by Hunley, whose study included five cases of bulbar poliomyelitis. Two patients died within one week, one with proved atelectasis. A third had atelectasis after transportation but survived several months. These data show that no comfort can be gleaned from the statement "there were no fatalities in flight."

Complications in our patients were usually presaged by increased secretions during flight. Sometimes increasing pulse rates, elevated temperatures, high systolic blood pressure, and increased respiratory difficulty became apparent during flight. Then fever would persist and climb, and physical examination or x-ray would confirm the diagnosis of atelectasis and pneumonia. Increase in pulse rate of 20 to 30 beats per minute, elevation of systolic blood pressure 20 mm. Hg or more, and sudden temperature elevation of two degrees or more should all connote possible inadequate ventilation or tracheobronchial obstruction and impending atelectasis. Recording these observations is a mandatory procedure before, during, and after flight.

Tidal volume determinations made with the Bennett respiratory meter before and during flight will also show respiratory insufficiency. A sudden drop in tidal volume of a patient who is being given respirator care is a sign of loss of respiratory area probably due to tracheobronchial obstruction.[5] This should indicate the need for added suc-

TABLE 4.—*Patients with Chronic Respiratory Insufficiency*

Case No.	Duration of Illness, Weeks	Preflight Data	Flight Data	Respirator	Oxygen	Tracheotomy	Altitude, Ft.	Duration, Hr.	Complication *	Outcome
10	112	98.6 F; out of respirator for hours	Condition good	Yes	Yes	No	7,000 to 13,000	9	None	.....
11	3	99 F	Constant aspiration	Yes	No	Yes	2,500	1	Excessive secretions	Died 17th day; bronchial obstruction; pulmonary edema
12	32	98.6 F; respirator full time	.....	Yes	?	Yes	4,500	2½	None	.....
13	16	Out of respirator 24 hours	Excessive secretions on arrival	Yes	?	?	6,000 to 9,500	6⅝	1st day: fever; atelectasis	Normal after 1 week
14	36	98.6 F	Constant suction	Yes	No	Yes	6,000	7¾	None	.....
15	40	98.6 F	Constant suction; nausea	Chest 50% of time	Yes	Yes	6,000	2	8th day: atelectasis; pneumonia	Died 10th day; atelectasis; pneumonia
16	56	98.6 F	Excessive secretions; dyspnea	Yes	No	Yes	3,000	1¼	1st day: "poor condition"; atelectasis	Died 110th day: atelectasis
17	4	Out of respirator 24 hours; 99 F	Cyanotic at 8,000 feet	Yes	Yes	Yes	9,000	9½	1st day: fever	27 days; returned to normal
18	14	Recent pneumonia; out of respirator 20 min.	Excessive secretions	Yes	Yes	Yes	4,000	2	None	.....
19	10	Out of respirator 5-6 min.	Condition good	Yes	No	Yes	8,000	10	None	.....
20	16	Out of respirator 2 min. at a time	.....	Yes	?	Yes	8,000	18	None	.....
21	14	98.4 F	Anxiety on arrival	Yes	?	Yes	6,000	1⅝	1st day: atelectasis	Unknown
22	12	98.4 F; atelectasis 1 month prior	Pulse rate 160 per minute; anxious	Yes	No	Yes	7,000	1¾	None	.....
23	56	98.6 F	.....	Yes	Yes	?	10,000	1¼	None	.....
24	24	Recent atelectasis; out of respirator 1 hour; 98.8 F	Tidal air declined 300 to 100 cc.; pulse rate 90 to 120 to 132 per minute	Yes	?	Yes	4,000	?	.....	.....
25	28	98.6 F; pulse rate 86 per minute	Tidal air rose 300 to 350 cc.; increased secretions; pulse rate 86 per minute	Yes	?	Yes	6,000	1⅝	1st day: fever; 7th day: atelectasis	Cleared
26	24	98.6 F	Tidal air declined 450 to 350 cc.	Yes	No	Closed	10,000	7	None	.....
27	64	Atelectasis 8 weeks prior; 100 F	Increased secretions	Yes	Yes	Yes	4,000	2	None	.....
28	28	Good condition	Mild anxiety; otherwise good condition	Yes	No	No	12,000	4	None	.....
29	40	102 F; cyanosis; atelectasis and pneumonia 2 days	Tidal air declined 220 to 200 cc.	Yes	Yes	Yes	5,000	1⅛	2nd day: gastric dilation; heart failure	Improved: 1 week
30	9	99.4 F	Tidal air declined 500 to 350 cc.; cyanotic; increased secretions; pulse rate 110 to 130 per minute	Yes	Yes	Yes	13,000	15	4th day: 104 F; atelectasis and pneumonia	Recovered
31	80	99.8 F	Tidal air declined 450 to 325 cc.	Yes	No	No	7,000	3¼	None	.....
Total	22					16			9	3 died

* All times in days following flight.

5. Austin, E., and others: Present Concepts in the Management of the Poliomyelitis Patient with Respiratory Difficulty, Phys. Therapy Rev. **32**: 339-345, 1952.

tion, tracheal lavage, and the administration of oxygen. Ventilation is maintained in our patients at levels similar to those observed before flight. Adjustments are necessary during flight when the tidal volume is observed to change because of variation in respirator function or decreased density of the atmosphere.

To the present date we have no method of determining oxygen saturation or hypercapnia accurately during the flight. We must rely on the above clinical observations. The important thing stressed here is that the old panacea of oxygen for respiratory distress is not adequate treatment. To avoid respiratory acidosis, adequate ventilatory exchange must be maintained.[6] This should be monitored by a good ventilation meter. Our present portable full-body respirator[7] seems to provide adequate exchange under most circumstances and will be under close scrutiny during the next phase of this investigation. Unfortunately, our problems are further complicated by the number of articles of equipment that must be available. These comprise in our group two separate battery units to provide power under all circumstances, one unit for aspirating the patient at all times, a supplementary oxygen unit to be used when the patient is away from the plane's oxygen supply, the respirator itself, an accessory tool kit that contains 37 separate items, 2 motor assemblies, a rectifier, a tracheotomy set, a catheter set, a set of tracheal adapters, and the ventilation meter and its connections.

With these materials and this type of clinical analysis, we hope to transport, with the best possible care and the least possible hazard, all patients requiring respiratory aid. Furthermore, by this approach, we will learn the definite problems of aerial transportation of people requiring respiratory aid. Teams are being carefully trained for this task. Information obtained will be useful also in evaluating the effects of aerial evacuation of patients with head injuries, encephalitis, neurotoxic disorders, meningitis, and other diseases in which adequate respiration and clearing of secretions are not automatic.

SUMMARY

The experiences of aerial transportation of poliomyelitis patients by the Air Force at the School of Aviation Medicine from July, 1952, to the present show that patients who need respiratory aid and cannot clear secretions are subjected to special hazards and complications during aerial transportation. Clinical care during transportation of patients who need respiratory aid places emphasis on the need for early tracheotomy, careful attention to removal of secretions, and adequate pulmonary ventilation at all times. Methods used by the School of Aviation Medicine include a well-instructed team comprised of a doctor, a nurse, and a medical technician all trained in the principles of respiratory and tracheotomy care. They must attempt at all times to emulate the best practices of the well-established respiratory center.

6. Blount,[3] Austin and others,[5] Stimson, P. M.: The Treatment of Acute Poliomyelitis, J. Pediat. **39**: 144-150, 1951.

7. Wilks, S. S., and Tomashefski, J. F.: Results of In-Flight Testing of SAM Portable Respirator on Poliomyelitic Patients, J. Aviation Med. **25**: 265-274, 1954.

A METHOD FOR MEASURING PHYSICIAN REQUIREMENTS, WITH APPRAISAL OF FORMER METHODS

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It is apparent from the literature on health programs that attempts to estimate the manpower necessary to give current and future health services to the American people are of major interest and primary importance. Special study commissions, the press, and the general public have all participated in discussions of the numerical needs for physicians, dentists, nurses, and health personnel.

VARIATIONS IN ESTIMATES

From most of the available reports one gets the impression that there is a serious shortage of physicians and that the medical schools and health institutions have been remiss in training an adequate supply for the future needs of the country. Some authorities, however, have ventured to estimate a surplus rather than a shortage. There are extremely wide differences in numerical estimates of need. For example, physician manpower estimates vary from a surplus of 6,000 by 1960 to a shortage of 61,000 (see table). The differences in the estimates emanating from the offices of the American Medical Association are of special interest. These range from a possible deficit of 15,000[1] to "more physicians than we need" by 1960.[2]

These wide differences suggest strongly that there exists no acceptable method of determining physician requirements. In a report in 1953 the National Manpower Council stated that until a standard of medical care, or the number of doctors required to provide a given level of medical care, is agreed upon, there can be no acceptable estimate of the current shortage of doctors. The present inadequate basic information is due to the fact that no theoretical framework for the analysis of manpower problems has yet been developed.[3] However significant present estimates may be, their use in determining future requirements is seriously open to question—if for no other reason than because of changing medical practices, the lack of acceptable standards of measurement, and the changing social and physical structure of the population. This fact became evident in a preliminary study to evaluate health resources, facilities, and services as inventoried in a previous Brookings publication.[4]

NEED FOR ACCEPTABLE METHOD AND DATA REQUIRED

Attempts to use present methods of estimating physician requirements made it quite clear that the initial approach must be based on measurable factors, such as

From the Brookings Institution.

Owing to lack of space, the bibliographic references, including those for the table, have been omitted from THE JOURNAL and will appear in the author's reprints.

medical services actually demanded and rendered under modern standards of diagnosis, therapy, and prevention (volume of services); physicians' time involved in rendering these services; and the morbidity of the general population, which is an expression of known need. It was also recognized that these factors should be evaluated in the light of their relevance to local conditions and the methods used in their determination.

It is obviously difficult to make practical application of national averages to the local community. With this thought in mind, the "community approach" to studies of health services has recently received attention from the Council on Medical Service of the American Medical Association. Surveys are made in those localities where the health services are particularly efficient, and reports are published on each component part of the program as guides to other communities with similar problems. When one considers that the need, the demand, and the success of each component part of a program is dependent upon—and related to—the characteristics of the people in the community rather than in the nation as a whole, it is quite evident that wide variation is possible in the organization, the operation, and the data relative to each component part. With this approach, a community is encouraged to evaluate its activities on the basis of what has been accomplished elsewhere and to establish its program in light of what the people in the community want, what they will accept, what they will finance, and what they are willing to undertake—rather than in conformity with arbitrary standards based on national surveys. In similar manner the physician requirements of a community could be determined; however, such determination would necessarily involve arbitrary community standards, posed against arbitrary national standards.

Estimates of Need and Expected Number of Physicians for 1960, According to Various Sources, in Thousands

Source	Base Year	Estimated Need	Expected No.	Indicated Shortage or Surplus
President's Commission *	1940 and 1949	227 to 292	233	+ 6 to −59
Mountin, Pennell, Berger †	1940	245 to 272	227	−17 to −45
Parran ‡	1940	270	209	−61
National Manpower Council §	1949	232 to 260	215	−17 to −45
National Health Assembly ‖	1940	228 to 261	212	−16 to −49
Ewing ¶	1940	254	212	−42
Higher Education Commission #	1940	228 to 258	202	−26 to −56
Curreri **	1940	200 to 210	186	−14 to −24
Rusk ††	1949	221	206.5 to 219	− 2 to −14.5

METHODS OF MEASUREMENT

Much of the literature on physician requirements has dealt with the subject in terms of personnel-population ratios, adequacy, quality, organizational structure, and as a problem of economics rather than as an appraisal of actual health services available.

Population Ratios.—Many numerical estimates of the need of physicians are framed in population ratios as a measure of the health personnel needed in proportion to the size of the community or population group. Several agencies have used such ratios as an acceptable standard of measurement in determining physician requirements.

Based on a Series of Assumptions: According to a report by the President's Commission on the Health Needs of the Nation,[5] based on this procedure but qualified by a series of six assumptions, the forecast for physicians in 1960 (see table) ranged from a surplus of 6,000 to a shortage of 59,000. The National Health Assembly [6] used three bases under five population assumptions for their report on physician requirements, with an indicated shortage by 1960 of from 16,000 to 49,000. Ewing observed that: "It is not necessary to make precise estimates of our needs for physicians. Even attaining the 12-state standard for physicians and dentists by 1960 is beyond our resources." He suggested that we set goals based on minimum demand, then aspire to the 12-state standard of supply. Feasible goals for 1960, according to his report, call for an increase in supply of physicians to 227,000.[7] Using the 12-state yardstick, Ewing estimated that, for 1960, 254,000 physicians will be needed as compared to a "feasible goal" of 227,000 and the present prospect of 212,000.

Based on Health Service Areas: In a somewhat similar approach, Mountin, Pennell, and Berger [8] sought criteria on the basis of "actual experience of certain portions of the population" in 126 provisional health service areas that were to serve as a measure of requirements. Applying the population data for these areas to the total number of physicians in the areas, they found that one-quarter of the population of the United States in 1940 was located in areas that maintained 146 or more physicians per 100,000 population (1 physician to 685 persons); one-third was located in regions that had 136 or more physicians to 100,000 population (1 to 735); and one-half of the population was located in areas in which ratios of 118 or more prevailed (1 to 847). With these three ratios as "minimum measures of adequacy," the physician manpower need in other areas could be approximated. This method attempts "to reflect actual utilization of physicians." It assumes, however, that all health service areas are comparable in education and social composition and, therefore, that demand for services will be similar—a situation not likely to exist.

Based on Medical Service Areas: Considering medical care as an economic "good," F. G. Dickinson, in his search for a measure of physician supply and distribution, applied the principle of "trade areas" to his study of "medical service areas." [9] The idea is that a physician does not confine his practice within a political boundary, such as county or state, but reaches beyond these limits to supply medical care. This method gives an excellent picture of physician distribution in relation to these medical service areas, but, unfortunately, it has the limitation of not showing the volume of services physicians are able to render within these areas. As Dickinson states, "A physician's performance is not measured by counting his numbers but through examination of data that will reflect his performance." [10] Aside from the probable overlapping of services, statistical references, such as population, vital statistics, and tax receipts and expenditures, are compiled on a state and county basis and thus raise difficulty in applying the medical service area principle to estimating physician resources. Ciocco and Altman,[11] while accepting the principle of medical service areas, find "the pattern of movement for medical care" from

one county to another is largely determined by the need for specific types of treatment and the areas in which these services are available. They also believe it more practical to adhere to county lines because professional associations and governmental units are organized on a county basis.

Dickinson's recent report shows that only 2 out of every 1,000 persons, or 0.2% of the entire population of the United States, live more than 25 miles from a physician.[12] This report also casts considerable doubt on the accuracy of physician-population estimates, pointing out that, according to the 1950 census, only 2,530 additional physicians in active practice would have been required to reduce all ratios in excess of 1,500 down to a ratio of 1,500. Dickinson admittedly views physician-population ratios as "very inefficient measures of the supply of physicians' services," though he found this particular characteristic less variable than the remaining 32 examined in the 757 medical service areas.[13] This survey would have had greater value if physicians' performance ratings had been obtained. Such information would contribute a measure for physician requirements within each of these medical service areas.

At best, physician-population ratios have served merely as an index of potential services and not as a measure of services actually rendered. The latter is reflected only in the performance of available personnel. Not all members of a community are recipients of health services. Moreover, among the recipients medical services vary greatly in extent and type. Age, sex, and race characteristics of the population tend to determine the incidence and type of illness in a majority of cases. Income distribution tends both to limit and to increase the number of visits to physicians. Migration and lack of particular services in one locality result in the transfer of patients from one area to another. Accessibility of medical services and seasonal variation in the incidence of illness also affect the volume of services. Then, too, people vary in their choice of medical services. Some prefer to employ osteopathic physicians, chiropractors, naturopaths, or religious practitioners. Personnel-population ratios make no allowance for actual volume of services, and, moreover, they assign to personnel and population a degree of homogeneity that they do not possess.

To supplant personnel-population ratios, refinements in the form of patient-personnel and visits-personnel ratios have appeared in recent years. These measures differ from personnel-population ratios in that the number of patients represent precisely that portion of the population that received health services, whether in the office, home, or hospital. "Patient load" is the accepted term for this method of measurements; this is discussed in detail later in this paper.

Demand and Need.—In an appraisal of methods used in estimating physician requirements, one finds no little confusion in the failure to clarify the distinction between actual "demand" for medical services as indicated by the extent to which people utilize them and theoretical "need" for medical services if all the people could recognize their defects and were willing and able to seek medical attention. Medical services may be viewed as a purchasable commodity, with a definable and measurable demand but with a need that cannot be measured, since it is variable, often unrecognizable, and dependent upon factors that are nonmedical and unpredictable. There is no accepted standard of need.

Medical services—like all commodities and services—are supplied according to demand, which, although not entirely fulfilling the need, is the only practical expression of need in a given society. The term "demand," when referring to medical services, is usually qualified by "effective" (where the need is fulfilled) or "noneffective" (where the need is unfulfilled). As a practical matter, one has to gauge physician requirements by both effective demand, referring to volume of service, and noneffective demand, recognizable through morbidity rates.

The use of effective demand as one of the measurable quantities in determining physician requirements has been questioned because the existing economic condition of the community may not necessarily permit the need for medical services to be transformed into actual demand. It seems fairly certain, however, that the differences found in the volume of services in various local communities reflect the social and economic level of the people. It is true, of course, that the need for medical services may be very much greater than the public is able or willing to pay for, just as the need for food, clothing, housing, and other goods and services exceed capacities for satisfying them. While incomes are restricted, the commodities or services that can be purchased are necessarily limited. Larger amounts would doubtless be spent for medical services if the people had a better comprehension of the importance of health. However, any assumption that complete medical services available to the population will be used by all the people is an idealistic conception of the term "need." Experience has shown that a period of years is often necessary to teach people the value and utility of medical care that may be available and quite adequate.[14] A fact generally overlooked is that maximum services latent in existing programs are often not fully utilized until a change in attitudes and habits of people occurs.

Even partial fulfillment of need must come through technical improvements and advances in the sciences, education, and social services, and yet, paradoxically, with these advances new demand is created almost daily. The following observation by Dr. Ffrangcon Roberts, the noted British physician, is as applicable to the health problem in the United States as to that in Great Britain: "The unparalleled progress which has been made in the last fifty years in the conquest of disease, has resulted in, or at least has been accompanied by, a greater demand for treatment and a greater inadequacy of supply than has ever existed in our history." [15] In fact, we reach a situation in which there is no assurance that health needs will ever be completely satisfied, much less measurable. We attain one goal only to find that goal moved forward.

Although Ginzberg argues that medical care is only a part of the whole economic problem, Reed warns that it is unrealistic to take the position that all social and economic problems must be settled before attempting a practical solution of the health problem per se.[16] We complicate the problem beyond solution when we try to correlate too many nonmedical aspects with what should be essentially a study of physician performances in relation to local practices.

Morbidity rates, although lacking completeness and accuracy to a degree, constitute a source of noneffective demand. Perhaps the most reliable statistical information available is that on the incidence and prevalence of disease within specific areas, such as data recorded from industrial and community surveys. Lee and Jones [17] developed a table of annual "expectancy rates" of major diseases that, if revised in the light of modern medical knowledge, could well serve as a pattern for representing present-day morbidity rates. A list of major diseases in the order of their incidence would vary considerably from the past. Such a listing now would point out that foremost in incidence is chronic illness, where formerly the communicable diseases had the highest rate. Likewise, the largest consumers of physician-hours would be changed from those with communicable diseases to those with chronic conditions. Incidence of illness, officially recorded (aside from prevalence of illness—the number of cases developing over a period of time in a population), is an expression of demand, both effective and noneffective—as well as an indication of need, both fulfilled and unfulfilled.

Services Actually Rendered.—The fact that "quality" and "adequacy" play a vital role in the actual medical services rendered and do not lend themselves to statistical interpretation appears to be a reasonable objection to using demand for services as a measurement in estimating physician requirements.

Quality and Adequacy: Quality of services is related to how well the job is done, to the skills of the individual operator, and to the application of specialized training to the actual services performed. Moreover, it is said that a number of general practitioners in a community do not make up for one of exceptional skills and ability. It is obvious, of course, that all fields of human endeavor benefit from men of outstanding ability, but it is also quite apparent that we will never have enough "rare talent" to care adequately for the volume and types of services required under modern medical standards. Of the total population, it is estimated that about 6% have the mental ability to attain a doctorate in any of the professions. However, it is also believed that "for every high school graduate who eventually earns a doctoral degree, there are twenty-five others who have the intellectual ability to achieve that degree but do not."[18] The full use of available "rare talent," which is the responsibility of the leaders of the professional groups, cannot be relied upon to fulfill all the services demanded.

As the term "adequacy" of medical services implies a qualitative as well as a quantitative aspect, the question is frequently raised: how can adequacy be estimated? Admittedly, quality and adequacy of medical practice are difficult, if not impossible, to define. What is considered adequate in one community is not necessarily so regarded in another, and what one group of medical experts implies to be adequate service is not necessarily so considered by another school of thought. The interpretation of the terms quality and adequacy is changing constantly and is subject to scientific advances applicable and acceptable to the patient in the form of new drugs, therapeutic procedures, and improved techniques. Two physicians may provide the same essential services, but, because of educational advantages and experience, one may render a higher degree of service than the other; yet the fact that each uses acceptable techniques and standards of procedure indicates a degree of adequacy. In this sense, quality as well as adequacy has a measurable characteristic, as has the physician after meeting the educational and licensure standards set by the state and specialty boards. These standards are recognized as a measure of ability to meet the requirements of medical practice. After all, the real "worth" of medical care is dependent upon the completed performance of professional personnel and the facilities through which their services are rendered.

In the last analysis, quality and adequacy are inherent in the "end-product"—actual medical services rendered —and in this sense they have measurable characteristics. This is the basic reasoning of a physician who was asked what criteria he would apply in judging the efficiency of a hospital; what relative importance he would attach to the qualifications of the staff, the ratio of beds to nurses, and adequacy of special departments, the catering, the facilities for reablement, and the various other items on which inspecting authorities commonly make notes. He replied, "I should not inquire into any of these things. I should simply go into the wards, select six patients, and find out precisely what had been done for them, and the care that they had received, since the day of their admission." As stated in *Lancet,* "This wise answer has implications beyond even the hospital services, for it embodies the truth that any kind of machinery, however ingenious, is but a means to an end."[19]

Makover,[20] in an effort to judge the quality of the medical services of the Health Insurance Plan of Greater New York (HIP), used the "ratings of clinical performances." In contrast, Farish and Goldmann,[21] in their study of the quality of medical care as provided by the Labor Health Institute of St. Louis, applied the Minimum Standards of Medical Service in Industry and the Minimum Standards of Hospitals of the American College of Surgeons together with their own devised time schedules of services. This approach assumes that the quality of care is high if all accepted standards are met. No attempt is made to determine the quality of the "end-product"—that is, actual services rendered as obtained from clinical records.

Quantitative Approach: The earliest comprehensive study made in an effort to formulate a quantitative method for estimating health manpower need was that of Lee and Jones in 1932.[17] Their approach was to estimate the volume of service and time required, within specific disease categories, to furnish adequate medical service—diagnostic, therapeutic, and preventive. Although they realized that "procedures and standards of practice are changing day by day," they felt the necessity of undertaking their study and making available at that time "a general picture of the medical needs which would serve as a basis for future determinations." The validity of the Lee and Jones method is questioned because it is too complicated and costly and because it does not take into consideration the economic aspects of the problem. It is valuable, however, as a guide in the search for an adequate measurement for determining volume of available services and personnel necessary to meet the demand.

Patient Load: More recently, Ciocco, Altman, and Truan,[22] in endeavoring to measure the volume of medical services rendered, have shown that "patient load"—the number of individuals seen by practitioners in a given period of time—is a useful index for determining the demand for medical care. The study also points out the disparity in average daily and weekly patient load according to age, sex, type of practice, location, and individual characteristics of the practitioner himself, factors not usually taken into account in estimating physician requirements. Furthermore, it is reasonable to suppose that the patient load varies in working combinations with other health personnel. Technological advances in the field of health have produced a large group of paramedical personnel. Both in the laboratory and in the clinic these advances have made it impossible for the physician to give personal attention to every detail of the growing complexity of medical care. Consequently, more and more of their services are delegated to subordinates. Physicians who employ a nurse see, on an average, one and a half times as many patients as physicians who employ no nurse.[23] Richardson [24] found that physicians with secretaries see 30% more patients than those without secretarial assistance, and those who employ technicians see 42% more patients than those without technical assistance.

Health personnel outside organized medicine, such as osteopathic physicians, chiropractors, and the like, tend to reduce the average patient load of the orthodox medical practitioner within a given population. In terms of patients seen during the week, the national average was 74.2 for osteopathic physicians [25] compared with the weekly average of 71.6 for medical practitioners.[26]

It is not implied in the foregoing that patient load alone constitutes an accurate measurement of the total demand for services. Patient load, as a means of measuring the performance of the individual physician, applied to the number of active physicians practicing within a community does, however, form a basis for estimating total demand. As Ciocco and his associates state,[26] "The two together are necessary in order to obtain a measure of services actually received and should constitute the basis for appraising the effective demand to be expected from a population."

Utilization of Services: Klarman [28] suggests, as a source of data, the utilization of services given under comprehensive prepayment plans, preferably on a group basis. These plans give the volume of services rendered to the enrollees of the prepayment plans, but they do not account for the total time of the physician, since few of them serve insured patients exclusively. The majority of the physicians on the HIP staff, for example, are in private practice as well.

Deardorff,[29] in a statistical analysis of rates of utilization of physicians' services to HIP enrollees, has used a system that, if extended to all services rendered in and out of HIP by the physician, could be used to show the total volume of services given concurrently with the changing practice of medicine. Her findings for partial service (services of radiologists and pathologists were excluded) show a ratio of 125 physicians per 100,000 population (1 to 800). The utilization rate for HIP enrollees was 4.7 physician services per person per year.

While "services actually rendered" gives the total volume in terms of demand, two additional factors are essential in medical manpower determination: (1) time, in minutes required per visit and in hours devoted to profession by the physician; and (2) morbidity rates.

Time Element: Time is expressed in terms of physician hours—the average time given per patient and the time devoted to practice each week. Available physician hours could then be compared with physician hours considered necessary as determined by the services rendered. Naturally, these elements of time change with development in medical practices and with the assistance of paramedical personnel. These changes may affect the time a physician spends with the patient and, in turn, affect the volume of service he renders. It is probable that additional estimates would be needed to determine the physician's desires as to the maximum length of the work week and the willingness or ability of the patient to use available services as recommended by the physicians. Such information would be essential in determining the requirements of physicians. At present, technological advances in medical services have tended to bring about an increase in the types of services as well as in the number of ancillary personnel.[30] A few major studies have emphasized time spent by physicians (per day or week) in providing medical services.

Included in a list of 22 recommendations for determining the extent and distribution of sickness by the World Health Organization Expert Committee on Health Statistics were utilization of the records of hospitals and clinics and the continuous records of doctors' practices.[31]

Recent studies of physicians' services to enrollees of the Permanente Health Plan, HIP, and the Windsor Medical Services, Inc., demonstrate the possibility of using clinical and hospital records as a method of determining morbidity.[32] These studies are of special interest as they are applicable to the general thesis that measurements reflecting actual performances of available personnel are the bases of determining manpower requirements.

METHODOLOGY OF PROPOSED PROCEDURE

In formulating a method, it is essential to determine physician requirements with the use of measurable factors dependent upon the actual volume of services rendered. In terms of averages and a given period of time, the following formula is suggested for estimating manpower requirements for physicians.

To arrive at the number of available physicians in terms of the "time element," it is necessary to know the total time required to give adequate care for all specified illnesses. This figure is the product of the total number of illnesses (X) and the total average time per illness (time spent with the patient at home, office, clinic, hospital, or by phone) (T). The total number of physicians in active practice (P) is then multiplied by the total average number of physician-hours worked per year (H), giving the total available physician-man-hours per year.

In order to ascertain the undersupply or oversupply of man-hours required (Y), the following equation may be formulated:

$$X \times T - (P \times H) = Y.$$

The final step of the formula converts the undersupply or oversupply of man-hours required into an oversupply or undersupply of physicians, as follows:

$\frac{Y}{H}$ = Oversupply or undersupply of physicians.

It is not maintained that the formula as presented is the only means by which physician manpower can be determined nor that it is the most desirable method to be used. It is believed, however, that it provides a basis for future studies that will eventually result in a measurable approach in determining manpower requirements.

As a means of collecting the necessary data, two contributory approaches are possible: the use of (1) a panel of group of practicing physicians, and (2) time-recording procedures and questionnaires. In the first approach it is proposed to set up a panel composed of physicians who are willing to serve experimentally in working out a procedure. These physicians do not necessarily need to meet formally as a panel, although this may be desirable at some stages in the procedure. From each of the panel members it is proposed to obtain estimates of the number of visits and the time required per visit for specific illnesses. From the panel it is assumed that a standard procedure could be developed that will have been tested experimentally on a sufficiently large group of panel members to render the use of such a procedure statistically sound and at the same time practical.

Also, it is assumed that within any sizable group of panel members the range in estimates by individual members of time per visit and number of visits needed for a specific illness will not vary radically from some "normal pattern." By modern sampling techniques, this "normal pattern" may be determined, from which an "average" estimate of physician-hours and corresponding requirements could be derived. It is also assumed that the "normal pattern" of estimates and its "average" represent a close approximation to actuality to enable the estimate to be used statistically as though it were a measurement of what actually occurs. In case of doubt, panel estimates could be checked against actual practice. The methodology used herein assumes that the estimate of time required per visit includes no administrative overhead allowance—"time attrition," an allowance for necessary time consumed but not on the patient directly—such as for necessary summarization of case notes, preparation of financial data, and so on.

This approach rather than the use of physicians' records is preferred by the majority of physicians and other persons familiar with medical practices who have been consulted. The practicing physician with long experience can tell within a comfortable margin of error the time necessary to give good medical care for a selected list of standard diagnoses.

If the panel methodology gives usable results—those that are consistent and represent a definite pattern of medical care—it is possible that the panel interview procedure could be extended in at least two of several ways. On a large scale, this could be done by the substitution of a tested questionnaire, involving most of the questions used in a direct personal interview with the panel physician but sent to a much larger random sample of cooperating physicians. The consistency pattern shown by the panel members should be suggestive as to the type and degree of consistency likely to be shown by the questionnaire respondents. Differences in average levels shown between these two types of respondents might indicate the nature of a possible adjustment factor to be applied to questionnaire data to bring these into line on a wholesale basis with panel results. On a small scale, this could be done by the use of actual time recordings obtained in the offices of cooperating physicians. The time may be recorded by either an attending nurse or assistant as part of her regular note-taking procedure or a lay observer admitted to some nonprivate section of the physician's office and having access later to some of his records, largely diagnostic and demographic data. Such actual time recordings, even on a small scale, could possibly be used as a device for adjusting the results of questionnaire and panel data to theoretical actual levels. This recording method would have the additional value of providing at the same time data on "time attrition."

The application of the above procedures need not be complicated nor expensive. All the information needed from "Community X" would be the number of physicians in actual practice, the average patient load, and the average time per visit. Time will vary, of course, with different illnesses and conditions and with the individual characteristics of the practitioner. If advisable, numerical estimates ranging from a maximum to a minimum could be given in accordance with population estimates. In determination of time, seasonal variations in medical practice sufficient to cover the four seasons of the year should also be taken into consideration, as this, in turn, affects the volume of services rendered. Then, too, as people vary in their choice of health services, some consideration should be given to the volume of services rendered by other practitioners, osteopathic physicians, for example.

SUMMARY

The purpose of this paper has been to explore the use of measurable data in developing a method for manpower determination in the field of physician requirements. Need for such a method is indicated by the absence of uniformity in approach to the problem and by the hesitancy to formulate a method because of the social and economic implications. Consequently, wide differences in numerical estimates have resulted, giving various impressions of shortages or excesses of physicians and causing misunderstandings among those who plan for current and future health and medical care programs.

The suggested approach in developing a method is dependent upon the use of factors that can support an evaluation of the actual performances of the physician concurrently with changes in the standards of medical practice and upon morbidity rates, which are interpreted as a practical expression of need for services. To meet the health needs of the nation is the ultimate goal, attainment of which must come through technological improvements and changed attitudes of the people, which will result in an increasing demand for services. "Quality" and "adequacy" of medical care are measured in terms of the end-product, or actual services rendered. Factors such as patient load, time per visit, and incidence of illness are considered tools in the construction of a formula

for estimating physician requirements. In the collection of those factors that are a measure of the volume of services, two procedures are proposed: a panel of physicians experienced in medical practices and a questionnaire to active medical practitioners.

The amount of effort devoted to estimating physician requirements without an attempt to consider what actual services can be given with available personnel is hard to understand in this age of technological efficiency. I am of the opinion that considerable advance could be made in solving the problem if an effort were made to build a framework of measurable statistical data around the actual performances of the various health and medical care activities rather than continuing with various theoretical and idealistic assumptions. In relation to such a background, current and projected requirements of physicians could be determined with considerable accuracy and even more so as methods for collecting factual data are perfected.

122 Jackson Place, N. W. (6).

MINK COATS AND CADILLACS

A DISCOURSE ON THE NUTRITION AND HYGIENE OF THE SOUL

Robert R. Newell, M.D., San Francisco

Good physicians, like good priests, have to live their profession. A doctor's style of life, the circle of his friends, and the emotional feed-back from his patients are all woven into his career. He cannot well put his career in a separate compartment. He will be wise to steer his life as one ship. He will have to use the capacities he was born with. It is too late to change grandparents. He will have to build on the personality developed in his upbringing. It is too late to change parents. Whatever strength of character he finds in himself can be built up further. Each year of life adds to the mass of what one is and soaks up ever more of the momentum one seeks to impart in the next year of living. So he can change his personality only slowly. But the art of human relations is wide open to his practice, just as the medical arts are.

What I am concerned with is the developing career and its ultimate flowering. You could call it the embryology of the career, only that this directs too much attention to the entelechy. It is true that a person may be successful by chance or inevitably because of his character and instincts. We do not suppose that a queen bee wastes thought or emotion on her deeds when she stings to death the other developing queens that might compete with her. I think of Hamlet's words (act 5, scene 2): "Our indiscretion sometimes serves us well when our deep plots do pall; and that should teach us there's a divinity that shapes our ends, rough-hew them how we will." No reason, however, not to use a good ax in the hewing. And surely a good will can make the blows mightier, and a clear eye direct them more precisely. We doctors have set our training on a scientific foundation. Science is the whetstone *par excellence* for sharpening vision. Oratory, which I am attempting here, is the hammer with which one welds steel into the will. So not intelechy but teleology is my concern. My point is this: With the right purpose, a doctor can make a success of his career, but he had better know his purpose. The hound that is tracking bear must not chase off after deer.

We are not always aware of our purposes. Pareto [1] points out that man acts according to his sentiments. The urge to be logical is a very strong sentiment. When sentiments conflict with logic or with other sentiments, a man may be unable to act unless he hides his real purpose, even from himself. What I am trying to develop is not much taught in schools. It lies in social and economic fields, where the scientific foundation is weak. But I like to think we have more to go on than just our intuition. What we want to know is the interaction of the physician (one's self) with the persons about him, individually and also as they are organized in groups. We are unconscious students of these interactions all our lives. Now I am aiming to become a conscious student.

It is not easy to look at ourselves and others, coolly, as a biologist looks through his microscope. Pride readily beclouds one's vision. I am not saying pride is evil. Pride is a prerequisite to accomplishment. Without pride we would never do anything well. Pride nourishes the soul as food nourishes the body, but when fat becomes obesity we had best go on a diet. When pride becomes overweening or degenerates into vanity, we had best study how to bring it within tolerance. A good medicine is humility. Let our humility not be the unctuous humility of Uriah Heep,[2] nor yet become aggressive. Humility can be used like a rapier and has been called the only weapon whose point cannot be turned, but no fair using it that way. Let us rather show a saving sense of humor, neither forcing our fancied qualities on others nor denying qualities that we do fortunately possess. And let us take an honest pleasure in praise that is in any way deserved. This may not be possible for one who is too dissatisfied with his own attainments. If this be the case, he had better move into a less demanding place or else get himself a more understanding psychiatrist. With proper humility and without the rose-colored glasses, we look at ourselves (doctors) and our motives and our actions together with their effects on others. If we were clever enough, we could analyze the feed-back that drives the mutual reactions toward equilibrium, or to disaster, or to success.

THE PAYOFF

In the jargon of game theory [3] medicine has just one payoff, namely the relief to the sufferer. The physician will not play the game well if he mistakes other payoffs

Read at the dedication of the Mayo Memorial Building, University of Minnesota, Minneapolis, Oct. 22, 1954.

1. Pareto, V.: The Mind and Society, par. 972.
2. Dickens, C.: David Copperfield, chap. 16.
3. Williams, J. D.: The Compleat Strategyst, New York, McGraw-Hill Book Company, Inc., 1954.

for the real one. In modern American civilization, in which everyone works for money and gets everything he needs by buying it with money, it is inevitable that the fee should often be accepted as the payoff proper to medical practice. The appreciation that dollar success is not the true payoff is illustrated in the specialty of radiology, even though the appreciation is unconscious. American radiologists usually start in the diagnostic field, in which their service is as a scientific consultant to the patient's physician. Later the majority buy apparatus to do therapy. Sometimes the radiologist will explain that it seems a shame to send the therapeutic work away, implying that the fee is right there for the taking. Yet it is well known that therapeutic radiology is no money-maker, for conscientiously done it takes too much time. I think these radiologists' purposes were nobler than they claimed. They knew that only in therapy would they themselves be caring for the patients. They desired this direct access to the payoff.

In trade, the payoff is profit. In manufacturing, the payoff is goods produced, which is easiest measured in market value. And so in trade or industry a man's success is measured by the money he has made. And the evidence of this is the things that he can buy with it. Rarely a businessman discovers that money is not the only payoff. Sam Hamburg, a Fresno, Calif., farmer, has made his million. He advises the 12,000 others who have made theirs to quit chasing the second million and go help the poor peoples of the world, as he has done in Israel. Not to give their money, but to give themselves, their know-how, already proved in their success. "Dirty kids will hold his hand and look up at him. This makes rich men rich!" [4]

Pride in accomplishment, self-satisfaction in success, and the desire to be important are facets of a sentiment that is basic in human character. Freud taught that sex is the mainspring of human motivation. It is easy to present the instinct that preserves the race as the most vital. Without it we would not be here. One finds biological examples of its transcendence over the preservation of the individual. One thinks of the salmon that batter themselves swimming up the rapids and, having spawned, die of their wounds before they reach the sea again. But in man, with his long time to puberty and his single child at a birth, the instinct to self-preservation has to be equally strong if the race is to survive. And the most casual observation of one's self or one's fellows confirms the tenacity with which a man hangs onto his life. The urge to be important is not just self-persistence, of course, although it must grow out of it. In social animals there is a dichotomy into altruism, the devotion to the interests of the group, and selfishness, which strives to advance the individual's position within the group. Peck order among fowl is an example. In ants, no class circulation is possible. Each ant is predestined by anatomy to be a worker or a soldier or a king. In man, the importance of the individual is felt to be in his own hands, to some degree. Importance is not measured by counting, like a hen's yearly egg production. It is measured only by the subjective estimate of the individual himself. Biologically it should be measured by his contribution to the survival of his race, but by actual observation it is evaluated in a much shorter view. In our society, the man puts his own value on himself, but consciously or unconsciously he uses the estimate of others in making the evaluation. In consequence a man's whole life is colored and his style of life determined by the daily necessity to show others that he is good, so that he may continue to believe it himself.

There was a young fellow from Fond-du-Lac
Whose outlook on life was completely black.
It made you feel sad
To see this fine lad
So set back by the lack of a Cadillac.

Not infrequently you meet the question, "What does he do to feed his ego?" This can be put quite invidiously, even aggressively. But if we accepted more willingly what I believe to be the fact, that feeding the ego is as essential to life as feeding the stomach, the question might more often be put in amiable words: "What does he do to nourish his soul?" I believe that we doctors have access to better bread for the soul, and more of it, than almost any other class of men. The obvious single payoff should make our problem of ego-feeding of utmost simplicity. On the whole, we receive good pay, for which most of us work hard, but the point is: fee or no fee, we are first rewarded in a priceless currency, the satisfaction of the good deed. This is not to be nullified by any patient's ingratitude or refusal to admit his debt. The payoff is collected in the doing, and no dunning letters nor suits in court can sour it. The soul has already consumed it and stored it away against less profitable days that may come later.

GREED

There are physicians who are greedy for money, just as there have been despots greedy for money. Nero, greedy for wealth, made his wealth visible in his Golden House that extended the width of the Forum and as far again.[5] He mistook the payoff. For a despot, the payoff is power. He does need gold, it is true, but only as a means to power. Greedy doctors also mistake the payoff. They ask for more and more money, so that they can build a minor golden house. In doing this they dilute their own appreciation of the good they do. The possession of wealth is not a winning characteristic. For a miser, perhaps, in his psychopathy, the corrosive acid of envy only polishes his golden treasure the brighter. But, you see, for him the gold is the genuine. For the doctor, gold is but the counterfeit, because the doctor has access to soul sustenance that the miser is unaware of. Gold in one person's possession is brightened by men's envy, but in the hands of another proves not noble after all and turns to brass.

Let us take the human need for self-importance as a really basic biological requirement. Let us not say that it is sinful. Let us merely say that it often expresses itself in ways that disgust us or enrage us. In every such case, of course, the feedback to the originator is, by that much, harmful to his purpose. We should class it as a blunder. Had the man been wiser, or better disciplined, this would not have happened, and we would not have been disgusted or enraged. He would have nourished his soul

4. Fortnight, Oct. 6, 1954, p. 4.
5. Baedeker, K.: Italy, from the Alps to Naples: Abridged Handbook for Travellers, New York, Charles Scribner's Sons, 1928, p. 315.

better in pushing not so much. If all our society were better educated and better trained (shall we say "better bred?"), the world would be a happier place to live in.

Napoleon knew how to dissemble his pride. He once wrote: "I am persuaded that I alone can appreciate myself." [6] Yet at the head of a procession in Paris, he wore his weathered old corporal's overcoat, and the people loved it. Lincoln's lack of vanity appears not to have been calculating but innate. In Illinois, if he was aware of the unique quality of his honesty and abilities, it was always well cloaked by his sense of humor. When he came to Washington his greatness emerged apparently imperturbable in the face of vitriolic political attacks. Not that he was calm, but that having once thought a thing through and taken action, criticism and even derision seemed not to affect him. The armor forged of his honesty and his humility seemed invulnerable. His pride was an inner pride, arising from the certainty that he was doing the best he could find out how to do and the belief that men would honor him for it if they could only know. A soul that is nourished by such stuff has no need for outward show to keep it healthy. We cannot all call on the reserves that Lincoln had. But we can draw on some of his words to help us. The phrase I am thinking of is in his second inaugural address: "With malice toward none, with charity for all." We need to understand the genesis of our exasperations, which often arise out of our dissatisfaction with our accomplishments and an unlovely envy of the importance of others. If we cannot avoid these malicious feelings, we had better at least find the self-discipline not to express them, for they only reveal our own shortcomings.

We need to understand the nutritional requirements of other people's souls. If we do understand, we can hope to judge them less harshly. To judge at all is hazardous, but not to judge is psychologically impossible. Let us at least judge charitably. If the business executive drives a Cadillac instead of a Ford, we may judge it to be ostentation, designed to excite men's envy. But more charitably judged, it is only what is expected of him, it is his insigne of office. In the hierarchy of his organization there may be insufficient room for the recognized levels of command, if the top executive drives a Buick,[7] leaving only the less expensive models to cover all the grades below. Still the Cadillac does excite envy, and envy is a sin. The sin lies on the soul of the envious one. But insofar as the purpose is to excite envy, that is a sin, too, and it injures the soul of the ostentatious one. Other people's sins are the concern of gossips and of priests. The priest's purpose is therapeutic, to repair the damage that the sin has done the soul. The gossip's purpose is suspect. He may be trying to minimize his own sins by comparison, or merely to distract attention from them. I here disclaim that I am a priest and earnestly disclaim that I am a gossip. I hope I am not mistaken for a scold. I wish to make this strictly a doctor's discourse, fitting into the field of scientific medicine. Even so, I am not talking about psychiatry. I am only trying to build up the idea that we doctors are foolish if we don't nourish our own souls and keep them healthy.

The hospital in which I work is surrounded by slums. Many Japanese were moved out of there by General de Witt in the name of safety immediately after the Japanese attack on Pearl Harbor. By the end of the war, more Negroes had moved in than Japanese moved out. With the Negro's capacity for enjoyment, these new residents of our slum drive their automobiles everywhere, carefully and happily, using them as a Mongol uses his horse,[8] even if the errand is taking them no farther than two blocks. And many of their cars are Cadillacs, which they keep bright and shining. We say, "He can't afford it." Let us remember that he cannot reveal his success by living in a better house, for no better house is available. I am not talking about our unwillingness to let a Negro family move into a non-Negro neighborhood. I am talking about the man's need to nourish his soul by a visible display of ownership.

OSTENTATION

A doctor with calls to make in the country may well need the power and comfort of a Cadillac. It may not be ostentation at all. It does advertise his success, and the success itself suggests his professional competence. But if he does make his calls in a car costing half as much, supposing this is honest and not a pose, thoughtful people may readily conclude that a mind and heart so little preoccupied with show may be more completely at the service of his patients. If a doctor builds himself a mansion, contrasting greatly with the homes about him, will this not excite the envy of his neighbors? And will his patients not resent it, that he made them pay so generously for his services? Medical care is not like television and many other desirable and expensive things, which one is willing to pay for if one can, but which one obviously can get along without. No one is willingly in the position of needing medical services. However gracefully the doctor's fee was met, the need to incur the debt was an unhappy one. A doctor's opulence, if too much flaunted, sets one to picturing his patient's poverty.

In the potlatch of the Northwest,[9] the chief advertises his wealth by the costly presents he gives to rival chiefs. In our European, or Western civilization, as well as in some others, the costly presents are given to the wife. Diamonds, unique in hardness and almost unique in brilliance, are outstanding. In the solitaire of the engagement ring, the diamond stands alone. But the ostentation of other jewels is being robbed of its effectiveness by the spate of "costume jewelry" at a fraction of the cost. Beautiful jewels are not readily assessed at a passing glance and are perhaps more dependable evidence of a woman's artistic taste than of her husband's wealth.

Mink is hard to counterfeit and is satisfactorily costly. It has become the sign of wealth as ermine has long been the sign of royalty. A mink coat is indeed beautiful to see and to touch and keeps a body warm. As a visible sign of success, it keeps the soul warm, too, and the soul has need of warmth even in the air-conditioned climate of San Francisco.

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6. Cohen, L.: Anecdotes of Napoleon, London, England, Robert Holden & Company, 1925, p. 15.
7. Whyte, Wm. H.: Is Anybody Listening? New York, Simon & Schuster, Inc., 1952.
8. Larson, F. A.: Larson, Duke of Mongolia, Boston, Little, Brown & Company, 1930.
9. Codere, H. F.: Fighting with Property, New York, J. J. Augustin, 1950, chap. 3.

The man's career is making money, the woman's is spending it. The man can show his wealth by buying a race horse or a yacht or by "picking up the tab." Or he can have his wife spend his money for him. For her the payoff is not in spending much but rather in getting much for what she spends. Much fun is made of women chasing bargains and of men buying the first pair of shoes that is offered, never mind the price. It seems to me that each is following his true star. The man knows that time spent in chasing a bargain would yield twice the profit if given over to his business. The woman sees herself win twice. She has the purchase to prove her economic attainment and also has the money saved in buying at a bargain, which proves what a good manager she is. If a woman buys herself a mink coat, she is acting in this not like a woman but like a man. She is spending money that she earned or inherited, and the coat proclaims her financial success. A woman should be given the mink coat. This shows how much some man thinks of her. A man's devotion is well recognized to be the true touchstone of a woman's success as a woman.

But I am speaking here of honest doctors and their honest wives. If she wears a mink coat it is indeed visible proof of her husband's financial success. I have already argued that for him the financial success is not the first consideration, that the real payoff for the doctor is the patient's welfare. But how about the wife? Her soul has need of sustenance as well as his. How can a wife's ego be kept well fed, the while her doctor husband achieves success? The satisfactions from devoted care of patients are his, not hers. The pride in successful rescues from the valley of the shadow of death is for him alone. Only if in her own heart she can make their two lives one, can she share his satisfactions well enough to keep her happy. Ruinous indeed will it be if she becomes envious of his success and jealous of his patients and the way they steal the time that "rightfully belongs to her." But if she can feel that she is in some degree his manager, that it is she who makes it possible for him to do all he is doing, then she can share in his satisfactions. If she can compare herself to the impressario who makes the artist available to his audience; if she can believe that without her he would fail, then she can take her cut of the payoff. And she will find it more warming than a mink coat.

SUMMARY

The Cadillac and the mink coat are only symbols, emotional and I hope pointed, but only symbols. They are intended to epitomize the soul-serving uses of ostentation. Having presented these symbols, I am pleading for better understanding of the things they represent and pleading for charity in judging other people, in view of their necessities for the nourishment of their souls. But let us doctors not choose this ostentation that less fortunate men have to content themselves with. Let us choose instead the payoff that is uniquely available to doctors, namely, the satisfaction of bringing the best we have to the patient who entrusts his life to our learning and our skill.

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CLINICAL NOTES

SYNDROME FOLLOWING ABRUPT CESSATION OF PROLONGED CORTISONE THERAPY

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Prolonged therapy with cortisone, hydrocortisone, and corticotropin (ACTH) is becoming increasingly common in diverse diseases.[1] It is to be anticipated that in many such patients prolonged therapy will occasionally be interrupted both by design and by accident. It appears that sudden interruption of prolonged cortisone therapy may of itself produce severe symptoms, the evaluation of which may be of considerable importance in the management of the patient. This report describes the characteristic clinical picture observed following abrupt discontinuance of prolonged cortisone therapy in 19 patients with chronic asthma. In 1951 long-term evaluation of chronic cortisone therapy was begun for patients with severe intractable asthma of undetermined cause. At the present time 31 patients are under study. Previous reports [2] have described the selection of patients, cortisone dosage, and the consequences of such treatment. Prolonged cortisone therapy has restored to near normal health and productivity these patients who otherwise were incapacitated with asthma. Since it appeared probable that progressive osteoporosis would be the major undesirable consequence of prolonged cortisone therapy, 19 of these patients were admitted for one week to the Massachusetts General Hospital in the past year for comparison of calcium metabolism with and without cortisone therapy. Abrupt discontinuance of cortisone therapy was chosen because previous experience had indicated that gradual withdrawal of the drug would result in exacerbation of asthma before therapy was entirely withdrawn. Cortisone was withheld in most instances until the return of severe asthma.

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1. Thorn, G. W., and others: Medical Progress: Pharmacologic Aspects of Adrenocortical Steroids and ACTH in Man, New England J. Med. **248**: 232 (Feb. 5); 284 (Feb. 12); 323 (Feb. 19); 369 (Feb. 26); 414 (March 5); 588 (April 2); 632 (April 9) 1953.

2. Burrage, W. S.; Irwin, J. W., and Gibson, J. S.: Maintenance Cortisone in Severe Bronchial Asthma, J. Allergy **23**: 310, 1952. Burrage, W. S., and Irwin, J. W.: The Role of Cortisone in the Treatment of Severe Bronchial Asthma, New England J. Med. **248**: 679, 1953. Irwin, J. W.; Henneman, P. H.; Wang, D. M. K., and Burrage, W. S.: Maintenance Cortisone in Intractable Asthma: Preliminary Observations of Undesirable Cortisone Effects, J. Allergy **25**: 201, 1954.

WITHDRAWAL SYNDROME

Clinical Observations.—From 24 to 48 hours after the last oral dose of cortisone the patients began to note a rapidly worsening headache that was constant, generalized, and made worse by motion. Most patients took to their beds and darkened the room. Anorexia, nausea, and retching soon followed and sharply limited spontaneous food and fluid intake. They complained of generalized malaise and, in several instances, of tender muscles and of marked arthralgia, though no extra heat or swelling of the involved joints was noted. The patients were restless and complained of fatigue but slept fitfully. Symptoms increased in severity for several days and then rather promptly waned and disappeared entirely without therapy. In one patient (see table, case 5), mild withdrawal symptoms were followed seven days later by collapse, nausea, and violent nystagmus suggesting acute labyrinthitis. These symptoms subsided spontaneously after several days only to recur briefly in one week. Another patient (see table, case 9) complained of weakness, easy fatigue, and malaise for nearly two months after abrupt cortisone withdrawal. Despite the sometimes alarming appearance of these patients, there were no major changes in temperature, pulse rate, respiratory rate, or blood pressure. A weight loss of 4 to 6 lb. (1.8 to 2.7 kg.) in three to five days was the rule. Daily urine volumes varied from 420 cc. to 3,200 cc., averaging 1,475 cc. In the face of voluntary fluid and food restrictions these amounts were larger than expected.

The table relates the severity of symptoms to the other clinical variables. In general the longer the period of cortisone therapy the more severe were the symptoms on stopping treatment. Previous experience with these same patients indicated that discontinuance of cortisone therapy after less than one year resulted in prompt return of asthma but no other symptoms. The severity or duration of withdrawal symptoms bore no evident relationship to the patients' age or sex or to the magnitude of cortisone dosage.

Laboratory Observations.—Normal fasting blood values were noted in all patients during the withdrawal syndrome for sugar, nonprotein nitrogen, sodium, potassium, chloride, calcium, phosphorus, and alkaline phosphatase. Because of individual symptoms it was further determined that the serum amylase was normal in two patients; sulfobromophthalein (Bromsulfalein) sodium (5 mg. per kilogram of body weight) retention after 45 minutes was 1% in one patient and 15% in a second patient; and serum cholesterol, vitamin A, and carotenoids were normal in one patient. After cortisone therapy was stopped the daily eosinophil counts rose in 11 patients, fell in 2, and showed no consistent trend in 5. Other diagnostic maneuvers that gave normal results were electroencephalograms in two patients, electrocardiograms in three patients, a lumbar puncture in one patient, and a Kepler-Power water test in one patient.

Clinical Variables of Nineteen Asthmatic Patients in Whom Cortisone Therapy Was Abruptly Discontinued

Case No.	Age	Sex	Duration Cortisone Therapy, Months	Average Cortisone Dose, Mg./Day	Severity Withdrawal Symptoms	Duration Withdrawal Symptoms, Days	Return of Severe Asthma, Days	Treatment, Days
1	53	M	11	100	+	4	10	.....
2	48	F	11	84	+	1	25	.....
3	36	M	12	87	0	0	3	I. V. 5% glucose, 1
4	34	M	17	76	0	0	7	.....
5	49	M	17	94	+	1	16	I. V. saline, 3
6	48	F	18	100	++++	4	3	I. V. 5% glucose, 2
7	54	F	24	63	++	3	51	I. V. saline, 1
8	62	F	25	63	++++	2	4	Cortisone
9	60	F	28	51	++	2	60	Cortisone, I. V. saline, 2
10	44	F	28	55	0	0	14	.....
11	60	M	29	117	+	2	4	I. V. saline, 2
12	43	F	31	84	+	1	8	I. V. saline, 3
13	61	M	32	73	++++	4	4	.....
14	39	F	32	63	+++	3	4	.....
15	56	F	34	77	++++	4	1	Cortisone
16	57	F	34	65	+++	3	3	.....
17	59	F	36	37	++	2	5	.....
18	43	F	36	85	+	2	3	.....
19	73	M	38	65	++	2	18	I. V. saline, 2
						Average	8	

The daily urine sodium and potassium excretion was studied in four patients. Without accurate information regarding the varying mineral intakes it can only be said that urine sodium and potassium excretions were not grossly unusual and followed no consistent pattern during the withdrawal syndrome. The daily 24-hour 17-ketosteroid excretion of one patient (see table, case 6) fell from 11.2 mg. with cortisone to 3.0 mg. without it. The 17-ketosteroid excretion of another patient (table, case 17) fell from 2.7 mg. with cortisone to 1.2 mg. without it. The urine calcium excretion decreased and remained low during the three to five day observation period in 14 of 16 patients so tested.

Attempted Therapy.—On the supposition that these withdrawal symptoms might be of adrenal insufficiency, six patients were given daily intravenous infusions of 500 cc. 0.9% saline solution for one to three days. As indicated in the table, symptoms were not abolished, though they probably were ameliorated. It is of interest that asthma returned in a severe form requiring restitution of cortisone therapy after an average of 8 days in those patients who did not receive saline infusions but

returned only after an average of 26 days in those patients treated with saline infusions. Two patients were given 15 mg. and one patient 25 mg. of cortisone acetate daily with little apparent effect on duration or severity of symptoms. Two patients received 5% glucose infusions probably without effect.

COMMENT

The cortisone withdrawal syndrome does not appear to be specific for patients with asthma but has been noted on stopping treatment in patients with rheumatoid arthritis.[3] The symptoms observed are reminiscent of the clinical course of patients cured of Cushing's syndrome (adrenal cortical hyperfunction) by appropriate adrenal surgery. Kepler [4] first pointed out that about one week postoperatively such patients develop severe anorexia, progressing to nausea and vomiting and abdominal tenderness and pain. Peeling of the skin, especially of the face, is the rule. These symptoms may not be accompanied by marked changes in the commonly studied blood chemical components; in some instances unexplained hypercalcemia has been observed. It is now known that these symptoms in the patients cured of Cushing's syndrome are regularly alleviated by small daily oral doses (12 to 25 mg.) of cortisone acetate. These symptoms disappear spontaneously 3 to 12 months after surgical cure of Cushing's syndrome.

The cause of the cortisone withdrawal syndrome is not clear at the present time. In favor of adrenal insufficiency is the known capacity of cortisone to produce adrenal atrophy,[5] presumably as a consequence of pituitary inhibition of corticotropin secretion. The symptoms are not unlike those of mild adrenal crisis, and adrenal insufficiency might produce salt-wasting and rapid weight loss. The decrease to very low values of the urinary 17-ketosteroid excretion is further evidence of adrenal insufficiency. The probable amelioration of symptoms by saline infusions may favor adrenal insufficiency as the cause of the symptoms. Against adrenal insufficiency are the normal vital signs, normal serum electrolytes, the failure of the 17-ketosteroid excretion to fall to zero, the lack of water retention as evidenced by large urine outputs and weight loss, the negative water test in one patient, and the lack of relief of symptoms with small doses of cortisone that might be effective in Addison's disease (adrenal cortical hypofunction).

In a complete balance study in a patient following surgical cure of Cushing's syndrome Henneman and coworkers [6] noted rapid repletion of body protoplasm and rapid mobilization and utilization of fat. It is not clear how such metabolic alterations might produce the described cortisone withdrawal symptoms. Slocumb [7] has reported that gradual discontinuation of cortisone therapy in patients with rheumatoid arthritis may be associated with a panmesenchymal flare and panangiitic reaction that may simulate lupus erythematosus or periarteritis nodosa. In our patients asthma usually returned only after the withdrawal symptoms had spontaneously cleared and it would not seem that these withdrawal symptoms represented an intensification of the fundamental asthma process.

SUMMARY

Prolonged cortisone therapy was abruptly discontinued in 19 patients with asthma. Twenty-four hours later nearly all patients developed headache, nausea, vomiting, restlessness, and muscle and joint pain. These symptoms subsided spontaneously after two to five days. The alarming clinical state of these patients was not associated with significant changes in vital signs or in the laboratory tests performed. The cause of these symptoms is not apparent at the present time.

ADDENDUM

We have recently seen a second instance of symptoms suggesting acute labyrinthitis following cortisone therapy.

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BUFFERIN IN THE MANAGEMENT OF RHEUMATOID ARTHRITIS

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Since ancient times, the salicylates have occupied an important place in the physician's armamentarium as analgesics and antipyretics. Extracts of willow bark, containing the glycoside salicin, were used in the treatment of fever by the physicians of Hippocrates' day. MacLagan, in 1876, demonstrated the clinical value of salicylates in rheumatic fever,[1] and today acetylsalicylic acid continues to be the mainstay of medical therapy of the rheumatic diseases, despite the advent of the corticosteroid hormones and corticotropin (ACTH).

Although in general the toxicity of acetylsalicylic acid is low, gastrointestinal intolerance may become a real problem in the clinical management of rheumatic disease where relatively large doses are required over long periods of time. This is the most common and troublesome form of "toxicity" encountered in clinical practice and consists of epigastric distress, heartburn, nausea, and sometimes vomiting. The incidence of such intolerance is variously reported to occur in from 3% to 10% of the general patient population.[2] Although there is evidence that salicylates have a central emetic action that may be

From the medical clinics of the Robert Breck Brigham Hospital and the Peter Bent Brigham Hospital.

The aspirin and Bufferin used in this study were supplied by the Bristol-Myers Products Division of Bristol-Myers Company, 630 Fifth Ave., New York.

1. MacLagan, T. J.: Treatment of Acute Rheumatism by Salicin and Salicylic Acid, Lancet **110**: 342, 1876.
2. (*a*) Paul, W. D.: Effect of Acetylsalicylic Acid (Aspirin) on Gastric Mucosa: Gastroscopic Study, J. Iowa M. Soc. **33**: 155, 1943. (*b*) Tebrock, H. E.: Gastric Tolerance for Aspirin and Buffered Aspirin, Indust. Med. **20**: 480, 1951.

partly responsible for the nausea and vomiting seen in severe salicylate poisoning,[3] local gastric irritation is the major problem encountered with the doses used in clinical treatment. The local irritant effect of acetylsalicylic acid on the gastric mucosa has been observed in human beings by direct gastroscopy and may be quite severe.[4] Numerous attempts have been made to reduce these gastric disturbances by the use of enteric coatings, slowly hydrolyzable salicylate compounds, and added antacid or buffering agents. Enteric coatings and complex salicylate salts often result in a diminished or irregular rate of salicylate absorption from the gastrointestinal tract.[5] Similarly, the commonly used antacids and buffering agents may result in irregular absorption and diminished salicylate blood levels.[6] Recently Paul and co-workers [5] have shown that acetylsalicylic acid buffered with aluminum glycinate and magnesium carbonate (Bufferin) is absorbed from the gastrointestinal tract more rapidly than is acetylsalicylic acid alone. Furthermore, this buffered aspirin caused symptoms of gastric irritation only once in 238 single dose trials on unselected subjects. In another study, Tebrock [2b] found that Bufferin (12-tablet dosage in 24 hours) caused gastric disturbances in only 1.8% of 1,006 trials in unselected cases. These studies indicated that Bufferin might provoke fewer undesirable gastric side-effects than plain aspirin. The present investigation was designed to determine the incidence of gastrointestinal intolerance to Bufferin as compared with aspirin in patients with rheumatoid arthritis.

METHODS

Tablets of identical appearance of Bufferin and U. S. P. aspirin, each containing 5 grains (0.3 gm.) of acetylsalicylic acid, were used. The patients were studied on the hospital wards of the Robert Breck Brigham Hospital and in suitable instances in private practice. All patients had active rheumatoid arthritis of varying severity as determined by clinical history, physical examination, and laboratory criteria. The majority of patients studied were receiving long-term therapy consisting of physiotherapy, dietary adjuncts, and in some instances gold salts. None of the patients studied was receiving corticotropin, cortisone, or "specific" antirheumatic therapy other than gold.

In the shorter experiments "blind" trials were used, in that neither the patients nor the nursing personnel knew the identity of the medicaments being administered, and when a change-over was made the patients were unaware of it. The dosage used was 2 tablets of either medicament at four hour intervals while the patients were awake or until gastrointestinal intolerance (heartburn, epigastric distress, nausea, or vomiting) forced cessation of treatment. In most instances patients were given aspirin for one to four days, then therapy was changed "blind" to Bufferin for one to four days and when possible back to aspirin.

RESULTS

Patients with rheumatoid arthritis are prone to a variety of gastrointestinal abnormalities (e. g., visceroptosis, impaired motility of large and small intestine, impaired nutritional status). A review of the hospital records of 200 patients with rheumatoid arthritis was undertaken in order to determine the incidence of gastrointestinal intolerance to aspirin. Of these 200 patients, 51 (26%) gave a history of "heartburn," "epigastric distress," "nausea," "gas," or "vomiting" on ingestion of aspirin. This high incidence presents a marked contrast to the 3% to 10% incidence of gastrointestinal intolerance to aspirin among unselected patients.

Forty-eight patients with rheumatoid arthritis who gave a history of gastrointestinal intolerance to aspirin were tested by blind trial with Bufferin and aspirin. Of these, 37 (77%) were found to be actually intolerant to aspirin, with development of one or more of the above symptoms. Eleven patients tolerated both medicaments without symptoms. Of the 37 patients actually intolerant of aspirin, 26 (70%) tolerated Bufferin without symptoms on blind trial. Eleven patients were intolerant of both aspirin and Bufferin. No patient tolerant of aspirin was intolerant of Bufferin.

To evaluate the use of Bufferin in the long-term management of this disease, 25 arthritic patients with proved gastrointestinal intolerance to aspirin were given Bufferin, 2 tablets four times daily, for periods of 4 to 18 months. One patient developed gastritis with epigastric pain and vomiting. This occurred after 20 days of continuous Bufferin medication and duplicated his previous reaction to aspirin. Twenty-four patients tolerated this regimen well without the appearance of untoward gastrointestinal symptoms. The following case history illustrates a striking example of a patient with aspirin intolerance successfully treated with Bufferin.

REPORT OF A CASE

A 32-year-old white housewife with rheumatoid arthritis of three years' duration entered the hospital in October, 1951, with a severe exacerbation. She complained of painful swelling and stiffness of fingers, wrists, elbows, shoulders, ankles, and feet to the extent that she was able to be up and about only two or three hours a day. She suffered from fatigue, anorexia, weight loss, mild vesperal fever, and sweating. She gave a history of marked gastrointestinal intolerance to aspirin. This was characterized by epigastric distress, nausea, and frequently vomiting developing approximately 30 minutes following ingestion of 10 grains (0.6 gm.) of aspirin, such an attack frequently lasting for hours. This intolerance had become more marked recently during the exacerbation of her rheumatoid arthritis. Physical examination showed the characteristic changes of active rheumatoid arthritis involving most of the peripheral joints, with muscle atrophy and early flexion deformities. Laboratory studies showed anemia (hemoglobin level 11 gm. per 100 cc.) and an elevated sedimentation rate of 1.6 mm. per minute; gastrointestinal x-rays showed hypertrophic gastritis and duodenitis. She was given supportive dietary therapy and physiotherapy. It was found that aspirin repeatedly produced severe gastrointestinal symptoms, and, although enteric-coated aspirin was somewhat better tolerated, it afforded little relief to her painfully stiff joints. On March 11, 1952, she was placed

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on a regimen of Bufferin, 2 tablets every four hours while awake, and this was continued for seven days. She noted moderate relief of pain and stiffness for two to three hours following each dose and experienced no untoward gastrointestinal symptoms with the exception of rare mild epigastric discomfort requiring no medication. On March 18, 1952, therapy was changed without her knowledge to aspirin. She noted heartburn and gassy distress within 20 minutes after the initial dose. Aspirin therapy was continued, but the patient developed increasing anorexia, nausea, and distress and on the second day developed persistent vomiting, requiring sedation, antacids, and belladonna for its control. On March 21, 1952, therapy was changed back to Bufferin, which the patient regarded with some suspicion but found that she could tolerate with only moderate heartburn relieved by antacids. Over the ensuing weeks she was able to tolerate Bufferin with minimum discomfort, and she has continued to use this medicament since discharge in June, 1952.

This case exemplifies a particularly distressing complication of salicylate therapy in the severely ill arthritic patient. Characteristically the nutritional status of such patients is markedly impaired and may be jeopardized still further by gastrointestinal symptoms consequent to aspirin medication. In this case, the use of Bufferin made possible continued salicylate therapy.

SUMMARY AND CONCLUSIONS

Seventy per cent of a group of patients with rheumatoid arthritis and proved gastrointestinal intolerance to plain aspirin tolerated Bufferin (acetylsalicylic acid buffered with aluminum glycinate and magnesium carbonate) with moderate analgesic benefit. Patients with rheumatoid arthritis had an incidence of gastrointestinal intolerance for aspirin two and a half to nine times that reported in the general patient population. A partial explanation of this difference in toxic effect may be that patients with rheumatoid arthritis require continuous medication at relatively higher dose levels than does the usual nonarthritic patient. It is of note that many patients requiring maintenance treatment with salicylates alleviate their symptoms of gastric intolerance with sodium bicarbonate. In not a few instances this continued intake of extra sodium has aggravated preexisting symptoms of cardiorenal disease. The use of a rapidly absorbed buffered aspirin that is well tolerated appears to overcome one of the major difficulties in the therapeutic use of salicylates in rheumatoid arthritis.

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Gallbladder Diseases.—The striking reductions in mortality from the major infectious diseases have tended to overshadow the large gains made in the control of many other diseases. Gallbladder disorders, which affect a very considerable proportion of the adult population, are a good example of the latter. Among white females insured under Industrial policies in the Metropolitan Life Insurance Company, the death rate from the diseases of the gallbladder (including gallstones) declined more than three fifths in the 15 years between 1936-1938 and 1951-1953—from 7.7 to 2.9 per 100,000. Among white males, the death rate was cut in half—from 3.4 to 1.7 per 100,000. . . . Policyholders in every age group shared in the improvement in mortality from gallbladder conditions, with the largest relative reductions in the 15-year period being recorded at the ages under 55. Thus, at ages 35-44 the decrease was four fifths among white women and two thirds among white men. Even at ages 65-74, . . . the reduction for the two sexes exceeded 40% and 25%, respectively.—Decline in Mortality from Gallbladder Diseases, *Statistical Bulletin,* Metropolitan Life Insurance Company, February, 1955.

DIAGNOSTIC PROBLEMS

PRESENTATION OF CASE

Mimi D. Slominski, M.D., Chicago

A 6-year-old boy was brought to the pediatric clinic because of feeding difficulties. He was the first-born of Austrian parents who were in good health. His birth weight and early physical development had been normal. He had been fed milk by bottle until he was 5 years old. When the bottle was taken away he declined food and had to be forced to eat. Physical examination at the time revealed only a few enlarged anterior cervical and many posterior cervical lymph glands. His abdomen was slightly distended and its muscular wall was firm. He was admitted to the hospital four years later because of abdominal pain that had been present for three months. It

Fig. 1.—Cross section of the surgical specimen showing the intussusception formed by the terminal ileum.

was primarily located in the right lower abdominal quadrant and was cramping in nature. It had progressed in severity and frequency until it was recurring as often as 8 to 10 times daily. There had been an associated loss of 4 lb. (1.8 kg.) during this period.

Physical Examination.—On admission the patient's oral temperature was found to be 99.2 F. There was a slightly tender mass that was more apparent on some examinations than others, in the right lower abdominal quadrant. Characteristically, the mass slipped away from the examiner's hand rather easily and, there was frequently an audible borborygmus associated with this maneuver. At times the mass apparently resolved itself completely during palpation.

Laboratory Findings.—A stool examination was negative for parasites. The total serum protein level was 5.3 gm. per 100 cc., the serum albumin level was 3.8 gm. per 100 cc., and the serum globulin level was 1.4 gm. per 100 cc. The blood cell count, hemoglobin level, and

From the Department of Pathology, University of Illinois.

urinalysis were normal. A barium enema showed an ileocecal intussusception with moderate obstruction.

Course.—Two weeks after admission the intussusception was removed surgically with resection of the terminal ileum and the cecum. Exploration of the abdomen during operation revealed nothing abnormal with the exception of the intussusception. The mesenteric lymph nodes appeared normal and were not resected. A primary ileocolostomy was performed with an end-to-side anastomosis. Gross examination of the surgical specimen revealed the intussusceptum to be formed by the terminal ileum, the apex of which showed numerous nodules of partially necrotic mucosa, which varied in color from dark gray to yellow. Sections taken through these nodular areas showed a solid mass of tumor tissue invading and replacing the submucosa and muscularis of the terminal ileum. Microscopically, the tumor was a lymphosarcoma.

Fig. 2.—Photomicrograph of the intussusception showing replacement of the submucosa and muscularis of the ileum by lymphosarcoma.

One month after operation a palpable, freely movable mass appeared in the right lower abdominal quadrant. It was believed that this might be an enlarged mesenteric lymph node. It was carefully watched, and over a two week period it increased in length to 6 cm. The peripheral nodes were normal. Three months after operation the abdomen was reexplored. A tumor mass, the size of a lemon, was found at the site of the old anastomosis. The lumen of the intestine was not obstructed, but the mesenteric half of the anastomotic site was firmly attached to the tumor. Therefore, a resection of the tumor with about 12 in. (30.4 cm.) of terminal ileum and 5 or 6 in. (12.7 or 15.2 cm.) of descending colon was performed. An ileocolostomy was done to reestablish the continuity of the intestinal tract. The patient was given radiation therapy to the entire abdomen through four portals front and back. He tolerated the x-ray therapy well.

He was followed in the tumor clinic at yearly intervals thereafter. Two years after the initial operation enlarged lymph nodes were palpated along the right posterior cervical chain and in the right axilla. The spleen was not enlarged. He was given a total of 2,800 r to the right cervical and right axillary areas and the nodes decreased in size to normal. Roentgenograms, including a barium enema and a gastrointestinal series, were essentially normal. The ileum was slightly dilated proximal to the area of anastomosis. The blood findings were normal during this time. Five years after the initial operation a partial obstruction developed in the patient's pharynx because of enlarged tonsils. These were treated with 225 r and decreased in size. Two years later a roentgenogram of his chest showed a scarred area in the left apex that was thought to be tuberculous. The patient's general condition was excellent. Subsequent follow-ups showed no change in this apical scarring in the next three years. The patient, now 20 years old, has remained well.

COMMENT

Norman Roberg, M.D., Chicago

Intussusception may occur at any age and in any part of the small or large intestine. The common cause of intussusception is a tumor within the lumen of the intestine. This tumor may be inflammatory or a benign or malignant neoplasm. The peristaltic waves of the intestine catch and force the mass downward toward the rectum, dragging along the attached intestine. The terminal ileum is the commonest location of intussusception, with the resultant telescoping of the lower ileum into the colon. The terminal ileum also is the site of the richest collection of lymphoid tissue in the intestinal tract. Inflammatory swelling of this lymphoid tissue may be the precipitating factor in the idiopathic ileocecal intussusceptions of infancy and childhood. Perhaps because of these collections of lymphoid tissue, lymphosarcoma occurs most frequently in the lower ileum. Lymphosarcoma originating in the gastrointestinal tract is being reported with increasing frequency. It occurs in all age groups, with some predilection for children below 10 and for adults in their 40's and 50's. Lymphosarcoma is considered to originate in a single location, to invade locally, and to have distant metastases only late in the course of the disease. Its natural history is, therefore, different from the multifocal origin of Hodgkin's disease. Lymphosarcoma of the terminal ileum is a frequent cause of intussusception and rarely causes complete obstruction in the absence of intussusception, but it may cause sufficient disturbance of bowel function to mimic the clinical findings of nonspecific regional ileitis and of nontropical sprue. Because the tumor either infiltrates the intestinal

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wall or is polypoid rather than ulcerative, anemia is unusual. X-ray examination frequently reveals dilated loops of small intestine consistent with partial obstruction.

The source of this boy's intussusception when he was 10 years old was not recognizable at operation, and the resection was not sufficiently wide to prevent recurrence at the site of anastomosis. Adequate resection was performed at the second operation and postoperative radiation therapy was given. Enlarged superficial lymph nodes and tonsils were irradiated two and five years, respectively, after the original operation. In the absence of microscopic examination of either the lymph nodes or the tonsils, it is improbable that these enlargements represented a lymphosarcomatous spread to these areas.

This patient's freedom from disease 10 years after radical resection and x-ray therapy illustrates the value of aggressive treatment of lymphosarcoma. The radical resection of apparently localized Hodgkin's disease remains controversial, but the radical resection of intestinal lymphosarcoma is of established value. In a collected series by Marcuse and Stout, 25 of 58 patients with lymphosarcoma of the small intestine, treated by resection or resection and x-ray therapy, survived five years. Of these 25 patients, at least 6 were living after 9 to 29 years. Unfortunately, there is early local extension of lymphosarcoma, and successful resection is feasible only when the organ of origin and the adjacent lymph nodes are amenable to wide resection. Thus, the gastrointestinal sites of lymphosarcoma offer the best opportunity for permanent cure.

Retrolental Fibroplasia.—Premature infants should be observed during the first three months for the development of retrolental fibroplasia, making due allowance for those features normally seen in a premature fundus. The earliest pathologic changes [are] observed during the third to sixth week. . . . The incidence of retrolental fibroplasia appears to be a direct function of prematurity. Sixteen cases were discovered among 349 infants weighing less than five pounds. However, only two were infants weighing more than 3 pounds 12 ounces. This disorder developed in 43% of those infants weighing less than four pounds at birth. Although retrolental fibroplasia may become arrested at any stage of development, in no case was definite regression of the disease observed in this study once advanced neovascularization or retinal separation occurred. No correlation between the incidence of retrolental fibroplasia and myopia was noted. Retinopathy of prematurity is due to an abnormal response of the retina of the premature infants to a relative state of hypoxia. The highest incidence rate occurs in the premature infants who are brought rapidly from an environment of high oxygen tension to normal atmospheric conditions. Premature infants should be given only that amount of supplemental oxygen compatible with normal respiration and survival, preferably under 40%, and for the briefest possible time. They should be gradually weaned from high oxygen concentrations to normal oxygen tension in air. It has become mandatory for all premature nurseries to be equipped with a standard and acceptable oxygen analyzer, and all nursery personnel should be trained in its proper use.—Commander G. L. Tabor Jr.; Commander J. F. Shaul, and Lieut. O. M. Graves Jr., (MC), U. S. N., Clinical Aspects of Retrolental Fibroplasia, *United States Armed Forces Medical Journal,* April, 1955.

SPECIAL ARTICLES

CIVIL DEFENSE PLANNING GUIDE FOR INDUSTRIAL PHYSICIANS

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The industrial physician occupies a key position in the civil defense preparations for the personnel of his company. On his shoulders rests the grave responsibility of planning for the emergency treatment of large numbers of casualties and their efficient evacuation from the plant. It must be anticipated that, with the possible exception of fire-fighting equipment and personnel, no immediate assistance can be expected from outside sources in event of enemy attack. The industrial physician must, therefore outline in advance a plan through which his plant can, as far as possible, become self-sufficient in the hours immediately following a major catastrophe. Since in any struck plant there will obviously be many more casualties than can be handled by the physician personally, it is essential that he build up a corps of assistants among the lay employees of the company and supervise their indoctrination in medical rescue work.

The object of this report is to provide for the industrial physician a basic plan to be used as a guide in the preparation and elaboration of his own company medical defense plan. The information presented herein is, of necessity, fairly general in nature, since it is obvious that a good defense plan must be tailored to the specific needs of the individual company concerned. In such planning, it will be necessary for the individual physician to qualify this basic information by considering the size of the company he serves, its location, the nature of its operations, management interest and cooperation, and the integration of the plan into the over-all community defense program.

BASIC PRINCIPLES OF DEFENSE

Evacuation Versus Shelters.—The development of thermonuclear weapons has created many additional problems in civil defense planning. The tremendously enlarged area of destruction and the more widespread damage to vital community services have emphasized the advisability of early and speedy evacuation as a primary defensive measure. Current thinking more and more leans toward evacuation as opposed to the principle of static shelters. The realistic fact is that most of the shelters that exist today were designed or designated to provide protection against atomic bombs. Such shelters are, for the most part, considered inadequate for protection against the vastly increased destructive force of thermonuclear weapons.

In addition, even such inadequate shelters are far too few in number. This situation has resulted from a num-

Chairman, Section on Industrial Health, Public Health Branch, Division V, Civil Defense Council of Philadelphia, and Medical Director, Bayuk Cigars, Inc., and C. Schmidt & Sons, Inc.

Members of the Section on Industrial Health, Division V, Civil Defense Council of Philadelphia are, in addition to Dr. Bresler, Drs. John M. Coe, Glenn S. Evarts, Howard Johnson, and J. C. McConaughey, and Messrs. William Helms, Thomas McConnell III, and James H. McNally.

ber of causes, including public apathy, failure to appropriate public funds for defense measures, reluctance to disturb the status quo by commandeering areas in valuable commercial buildings for shelter purposes, disinterest on the part of industry, and a disinclination to spend the funds necessary for an adequate defense program. It should be pointed out, in all fairness, that utility companies (gas, electricity, telephone) are notable exceptions, in that for the most part they have in readiness plans and preparations for any anticipated catastrophe. Opponents of shelter-defense must, at the same time, admit that evacuating the inhabitants of even a medium-sized city is a Herculean task, one that will tax the ingenuity and resources of even the most capable planners. Yet, in view of the sheer and utter destruction caused by thermonuclear weapons, there seems to be no adequate practicable alternative. Early evacuation of personnel is the authorized policy of the Federal Civil Defense Administration, operating under the logical philosophy that it is better to save some of the people than none.

Tactical Considerations.—There are three possible tactical situations that must be considered by the individual company: (*a*) direct hit: In such a case, complete destruction and almost total mortality must be anticipated. Defense plans would be completely inoperative. (*b*) clean miss: No destruction, few or no casualties. In such a case, personnel and facilities must be made available to the community pool for assignment to stricken areas. (*c*) near hit: Structural damage and many casualties. This is the situation in which a properly developed defense plan can be of untold value in protecting life and property. It is toward this situation in particular that this report is directed.

Integration into Community Plan.—Because of the size and nature of the problem, it is essential that each industrial defense plan be integrated with that of the community on an over-all basis. The plan that follows outlines steps that may be taken to protect life and property in-plant, but it must be emphasized repeatedly that such individual plans must remain secondary to the community defense plan. Industry must consider itself, first and foremost, as an available pool or source of manpower, blood, supplies, and transportation facilities for the benefit of the entire community and only secondarily as an individual unit bent on its own preservation. Industry must bear in mind the fact that an attack by thermonuclear weapons in the area will halt all nonessential industrial operations. This applies even to those companies not badly damaged as a result of the attack, since it must be anticipated that vital services—water, light, power, gas, and telephone—will be interrupted, temporarily at least. In the unlikely event that production could be continued, however, there would still be no way to move goods from the plant, since transportation facilities and highways will be reserved for civil defense activities and the evacuation of personnel. In view of this fact, it is obvious that the greatest good for the greatest number will result from the acceptance by management of its proper place and role in the community civil defense program.

The Problem of the Small Plant.—The defense plan that follows applies essentially to those companies of sufficient size (100 employees and over) to justify the existence of a formal civil defense program. Smaller companies that are unable alone to establish such a program should consider the feasibility of joining forces with neighboring small companies for this purpose. "Neighborhood" industrial health services have operated very successfully in many areas. This principle can easily be extended to cover combined civil defense activities. Additional information for small plant defense plans can be obtained from: Division 5, Civil Defense Council, Room 602, City Hall Annex, Philadelphia.

ORGANIZATION OF MEDICAL DEFENSE PLAN

Over-All Company Plan.—Under the supervision of a plant defense coordinator, an industrial defense plan may include the following functions and divisions: (*a*) fire protection, (*b*) police protection, (*c*) engineering, (*d*) plant warden, (*e*) welfare, and (*f*) medical protection.

Overlapping Responsibility.—It is quite possible that medical personnel may be called upon to assume responsibility for duties other than and in addition to those involved in medical protection. This will depend upon the size of the company and the nature of its organization and operations.

Structure of Medical Defense Plan.—The medical director bears complete responsibility for organizing medical service in event of catastrophe. Under his direction, medical service can best be provided through the medium of medical teams and stretcher teams. The medical team should consist of a physician, nurse, and a number of lay employees trained in first-aid procedures. In actual practice, the available professional personnel will have to be distributed in accordance with the needs of the particular plant. Thus, where two medical teams are indicated, such as in a multibuilding company, and only one physician is available, one team would consist of the physician and nonprofessional assistants, the other of the nurse and nonprofessional trained assistants. The size and layout of the plant, the nature of the industrial hazards involved, and the number of employees in the company are factors that will affect the number of medical teams required and their disposition and utilization. As many volunteers as possible should be organized into stretcher teams. Each team should consist of five individuals to allow the loss of one as a casualty. Women may also be utilized in this capacity if they are fit and have the necessary physical size and strength to fulfil such a function. Following is the minimum number of stretcher teams recommended for companies of various sizes: (1) in plants with 1 to 99 employees: one team for each 25 employees; (2) in plants with 100 to 499 employees: one team for every 50 employees; and (3) in plants with 500 or more employees: one team for every 100 employees.

Specific Duties of Component Elements.—The medical director plans and directs the organization of health and medical service; coordinates plant medical services with those of local civil defense organization; coordinates plant medical services with other plant catastrophe services under supervision of the company civil defense coordinator; directs all medical staff activities and training of personnel; creates stockpiles of necessary drugs, medical supplies, and equipment; arranges for alternate and auxiliary in-plant first-aid stations; organizes medical and

stretcher teams; develops plans for identifying, transporting, and keeping records of casualties; arranges for ambulance or other types of casualty evacuation; locates next-echelon evacuation point (receiving station or emergency hospital); and, with the assistance of the safety engineer, lists and plans special measures to control and to prevent injury from specific industrial hazards (high pressure boilers, toxic gases and chemicals, acids, etc.). He should be a member of the company civil defense organization. The medical team (1) undergoes a thorough indoctrination in first-aid procedures, under supervision of the physician; (2) mans dispensary and auxiliary first-aid stations; (3) assists in training stretcher-teams in first-aid and stretcher-bearing techniques; (4) becomes familiar with special plant hazards and methods of treatment of injuries resulting therefrom; and (5) assumes responsibility for completion of medical tags, identification, and disposition of injured. The stretcher team (1) learns first-aid techniques with special emphasis on the transportation of the injured, and (2) transports injured by stretchers to first-aid stations or to loading points for vehicle evacuation.

RECRUITMENT AND TRAINING OF PERSONNEL

Recruitment.—As outlined above, personnel required in the medical defense plan are physicians, nurses, and lay employees who must be trained to serve on first-aid and stretcher teams. Employees selected for first-aid and stretcher teams should be drawn from all departments and locations in the plant. This results in more complete plant coverage and also minimizes the loss of first-aid-trained employees in event of disaster in one portion of the plant. In recruiting personnel for this work, preference should be given to those individuals who by nature and temperament are able to remain calm and to think clearly under conditions of emergency. Recruitment may be aided through the following mediums: pay envelope inserts, bulletin board posters, company publications, pertinent union publications, spot messages over plant public address system, special meetings and rallies, civil defense films shown during lunch hours, and individual letters to employees from top company executive.

Training.—The medical director is directly responsible for the organization and training of persons to be utilized in the medical defense plan. He may conduct such training personally, with the assistance of the members of the medical and safety departments, or he may utilize outside sources of assistance. The plant nurse shall assist the physician. In plants that do not utilize the services of a physician, the nurse shall perform the duties listed above as far as she is able and shall then arrange for additional assistance from outside sources. Particular attention is invited to the services offered by the American Red Cross in providing instructors for the teaching of first-aid. The American Red Cross standard and advanced first-aid courses are designed to familiarize lay persons with first-aid techniques and methods of transporting injured persons. The standard course requires approximately 22 hours of training, including 4 hours of training outlined in the 1951 civil defense supplement. The advanced course requires an additional 12 hours. Instructors for these courses may be arranged through the director of safety services of the local American Red Cross office.

The medical director should designate to management a number of intelligent, cooperative workers who are willing to take the full courses of training and become instructors. These may, in turn, conduct courses of training for other employees. It is considered desirable that the greatest possible number of employees be trained in basic first-aid procedures. Employees should be trained to work together, but it must be kept in mind that, in event of a great number of casualties, it may be necessary for them to work in pairs or even individually.

It must be emphasized that the fundamental purpose of first aid is to prepare the patient for transportation to a treatment center so that he will arrive in no worse condition than when he started. The direct concern here is to stop hemorrhage, restore respiration, treat shock, or splint a fracture, nothing more. Where a number of small plants are in proximity to each other, it may be found desirable to have one instructor give joint classes in which employees from the various plants participate. Where budgetary considerations permit, each employee receiving first-aid training should be issued a small, pocket-sized simplified first-aid manual.

AUXILIARY FIRST-AID STATIONS

It is essential that a number of auxiliary or alternate first-aid stations be designated in advance and properly stocked. Such additional stations are required, first, in event of destruction of the main dispensary, and, second, to augment regular facilities in providing emergency care for large numbers of casualties scattered over a wide area.

Number.—Each plant should have one main treatment station (usually the plant dispensary) and at least one other station (alternate or auxiliary emergency dispensaries). The number of such stations will depend upon the number of employees, their distribution throughout the plant, and the area and layout of the plant concerned. Any dispensary or first-aid room currently in operation should be included in the total count.

Location.—Station locations should be selected so as to afford maximum protection against blast, fire, radiation, and moisture. Stations should be easily accessible. Stations should be separated as widely as feasible in the plant area to avoid the likelihood of multiple destruction. Station floor space should be large enough to permit the free movement of a number of stretcher cases and a substantial number of ambulatory injured persons.

Specifications.—Each station should have at least two exits. Ventilation must be adequate. Running water should be provided if possible.

STOCKPILING OF DRUGS, SUPPLIES, AND EQUIPMENT

The supplies listed on the following page should accommodate the anticipated injured in a company of 100 employees. One-half of this amount may be said to constitute "one unit," the quantity recommended for each group of 50 employees in the small plant. As plant population increases, the proportion changes in accordance with the following guide table:

Plants having 100 employees or less:	1 unit per 50 employees
Plants having 100 to 500 employees:	1 unit per 75 employees

Plants having over 500 employees:
1 unit per 150 employees

Example: A plant with 450 employees would need 450 ÷ 75 = 6 units or 3 times the original 2 units.

A plant with 1,500 employees would need 1,500 ÷ 150 = 10 units or 5 times the original 2 units.

The question of cost of materials for the stockpile may be found to be a stumbling block when presented to management. It should be borne in mind that in case there should never be an attack, few of the materials stocked deteriorate appreciably and could therefore be used in the daily dispensary work carried on at the plant. Therefore, the employer is not donating this cost but merely advancing the money to purchase material for future use. It is not necessary to purchase all of the material at one time. The cost may be divided by simply increasing the amount ordered for regular dispensary supply over several months.

The list opposite represents the supplies estimated necessary to provide first aid in case of disaster for approximately 100 employees and constitutes two "supply units." The columns designated "P," "N," and "F. A.," physician, nurse, and first-aider, respectively, indicate the required qualifications for administration of the item in question.

It must be borne in mind that the above list should be considered only as a general guide in the preparation of stockpile lists. Additions and deletions should be made to fit specific conditions in individual plants. In plants where suffocation or poisoning from toxic gases may become a problem, resuscitation equipment, oxygen, and stimulants may be added. In the more hazardous industries, such as steel mills, heavy construction operations, and shipyards, additional supplies of splints and bandages may be required. Supplies should be prepared and packaged by units in strong, waterproof, portable containers. Chests, surplus Army footlockers, or specially made chests may be used for this purpose. Supplies should be stored in or near auxiliary aid stations. Precautions should be taken to prevent pilferage.

Supplies for Plant with 100 Employees

	Item	Amt.	Approx. Cost, $	P	N	F.A.
1.	Special burn solution *	200	0.50	X	X	X
2.	Phenobarbital 1½ grain	200	0.80	X	X	..
3.	Morphine syrettes ¼ grain	50	5.00	X	X	..
4.	Antiseptic, surgical, 1 pt	2	5.00	X	X	X
5.	Cotton, absorbent, 1 lb	2	2.00	X	X	X
6.	Bandage, elastic, 3 in. x 5½ yd	24	36.00	X	X	X
7.	Bandage, elastic, 6 in. x 5½ yd	24	60.00	X	X	X
8.	Bandage, gauze, 2 in	12	1.94	X	X	X
9.	Bandage, gauze, 3 in	24	4.68	X	X	X
10.	Bandage, gauze, 4 in	24	6.80	X	X	X
11.	Bandage, triangular muslin	36	12.00	X	X	X
12.	Gauze squares, 2 in., individually wrapped	100	1.20	X	X	X
13.	Gauze squares, 4 in., individually wrapped	100	3.30	X	X	X
14.	Gauze, roll-folded, 36 in. x 5 yd	12	8.86	X	X	X
15.	Gauze, roll-folded, 36 in. x 25 yd	2	7.34	X	X	X
16.	Cellulose dressing with gauze facing, 12 in. x 24 in	12	4.80	X	X	X
17.	Cellulose dressing with gauze facing, 24 in. x 36 in	12	7.20	X	X	X
18.	Sheet wadding, cotton, 5 in. x 6 yd.	12	6.95	X	X	X
19.	Splints, ⅛ in.-¼ in. light wood, 3½ x 30 in	24	20.00	X	X	X
20.	Splints, small (tongue blades), 1 in. x 6 in., box 100	2	0.80	X	X	X
21.	Tourniquet, web, 1 in. x 24 in	6	5.40	X	X	X
22.	Bandage scissors, 6 in	2	4.40	X	X	X
23.	Vaseline gauze strips (1 carton of 6 pkgs., 2 strips each), 3 in. x 18 in.	20	60.00	X	X	..
24.	Flash light with bulb and battery	4	6.00	X	X	X
25.	Safety pins (large), 12's	4	0.40	X	X	X
26.	Holocain and metaphen eye ointment, ⅛ oz. tubes	12	8.60	X	X	X
27.	Adhesive plaster, 3 in. x 5 yd	4	7.50	X	X	X
28.	Lipstick	2	0.50	X	X	X
29.	Regular pencil	2	0.10	X	X	X
30.	Sutures, catgut, no. 1 plain tubes	12	6.00	X	X	..
31.	Sutures, skin, with needle no. 00	24	12.00	X	..	..
32.	Needle holder, 7 in	2	14.60	X	..	..
33.	Scissors, dissecting, straight, 5½ in.	2	5.00	X	X	..
34.	Forceps, hemostatic, straight, 5½ in.	10	50.00	X	X	..
35.	Forceps, tissue, straight, 5 in	2	5.00	X	X	..
36.	Aromatic spirits of ammonia, cartons 10 units, 4 2-cc. ampuls per unit	2c	3.00	X	X	X
37.	Paper cups, cartons of 200	1c	0.50	X	X	X
38.	Quart containers (any serviceable type)	6	....	X	X	X
39.	Pads of medical tags to be attached to patient after treatment	..	....	..	..	..
	Approximate total cost of 2 units	..	378.57			

* The special burn solution mentioned in the list consists of 1 teaspoonful of sodium chloride and ½ teaspoonful of sodium bicarbonate mixed in 1 qt. of water. This solution is given by mouth starting as soon as possible after injury. The only contraindication seems to be unconsciousness and vomiting. There is no specified limit as to the amount that can be given, but, as in any illness or injury, frequent small amounts are recommended. The dry ingredients should be put up in individual packages that can be added to a quart of water at the time of use. These packages should be stored in moistureproof containers.

Note: Antibiotics and tetanus antitoxin have been omitted on the assumption that they will be given in the next echelon of treatment rather than immediately after the injury. They may be used if part of regular dispensary supply.

COMMUNICATIONS

While not a direct function of the industrial medical department, communications play an important part in the proper operation of a medical defense plan. The medical director, through the company civil defense coordinator, must see that communications facilities are adequate for medical needs. In general, this falls into the categories of external and in-plant.

External.—Information is required as to the location of the bomb burst. Only in this way can clear emergency routes be designated for the evacuation of personnel. Since there is a strong likelihood that regular telephone service will be disrupted, such outside intelligence can be obtained only by means of radio. Since the radio broadcasting towers in Philadelphia are located in widely scattered areas of the city, it appears reasonable to assume that at least one tower and station will remain in operation following an attack. The federal government, through the Federal Communications Commission, has allocated some points on the standard (A. M.) radio receiving band for this purpose (640 and 1240 kilocycles). Additional information on this subject may be obtained from a pamphlet, "In Case of Attack," Cat. No. FCD 1.2:C75, five cents each, Supt. of Documents, Government Printing Office, Washington 25, D. C. A required item of communications equipment, then, is at least one small standard radio. If emergency power source is available (from an alternate outside generating station), an ordinary A. C.-D. C. set should be satisfactory. If no emergency power source is available in a particular plant, the radio should be of a type that will operate either on regular current or on batteries.

In-Plant.—Provision should be made for alternate means of communication in-plant. Normally the plant telephone and public address system are adequate for this

purpose. If there is power failure and no emergency source of supply, provision should be made in advance for a number of individuals to be assigned to the medical department as messengers, to relay messages and to replenish supplies as required. Special communications problems related to the medical function should be referred to the communications chief under the plant defense coordinator.

IDENTIFICATION

Identification of In-Plant Rescue Personnel.—Each member of the plant first-aid and stretcher teams and other medical rescue personnel should be provided with an external means of identification to facilitate their movement through stricken areas both outside and in-plant. For such a purpose, an arm band is simplest and most economical. Each individual registering as a civil defense volunteer with division 5 of the Philadelphia Civil Defense Council, either directly or through his plant, will receive an official plastic arm band insignia at no cost. In event that a plant desires to use a private or special identification system, it must be borne in mind that arm band insignia should be distinctive in nature, easily identifiable at a distance, and made of durable material. For the sake of uniformity and liaison with the municipal plan, it is urged that as many medical rescue personnel as possible be registered with division 5 of the Philadelphia Civil Defense Council. (Registration forms may be obtained by mail from Room 602—City Hall Annex.)

Identification of Industrial Workers.—Personal identification, preferably of a durable or permanent nature, would be of tremendous assistance in event of disaster. Several methods are suggested, each presenting both advantages and disadvantages. 1. "Dog-tag" type—of metal, plastic, or composition—to be worn on a cord or chain around the neck is simple, convenient and inexpensive. Disadvantages: to persuade workers to wear tags at all times; problem of loss and replacements. 2. Identification cards are inexpensive and easily replaced. Disadvantages: not durable unless plasticized; easily lost or damaged; inflammable; problem of keeping it on the person at all times. 3. Tattooing is an indelible, permanent means of identification. Disadvantages: expensive, time consuming, objectionable on aesthetic basis. "Dog-tag" identification is recommended. Tags for each individual should contain the following information: name, address, religion, blood type, and social security number, as below:

Ryan, John Joseph
1234 N. Broad St.
Philadelphia 6, Pa.

204-23-7226 Cath "AB"

Identification of Casualties.—Identification of casualties is extremely important. In addition to personal identification as described in above, each casualty seen by the first-aid team should be further identified with a tag containing certain basic information, as follows: (1) name, (2) time and place found, (3) general nature of injuries, (4) treatment given, (5) disposition, and (6) signature of medical attendant. Information should be as brief as possible consistent with completeness.

Since tags must be prepared in duplicate, they should be padded with carbon paper between each pair. Tags should be made of heavy paper or cloth and should include a string for attachment to patients' clothing. The duplicate tag should remain in the tag book, which when completed should be turned over to the individual in charge of medical records. The recommended form for medical tag is illustrated below:

Name:..... Date:.....
A. M.
Place found:..... Time:.....P. M.
Nature of injuries:.....
.....
.....
Treatment: .....
.....
.....
Disposition: .....
.....
.....
Signature of attendant:.....

Identification of Treatment.—Treatment must be indicated on the patient's medical tag. Provision should be made for additional precautionary measures to avoid duplication of treatment. Such additional precautionary measures are particularly important with regard to tetanus antitoxin and morphine. The simplest method is to indicate special treatment by markings on the patient's forehead with lipstick or skin-marking pencil. The following letter system is recommended: M, morphine (or equivalent narcotic); T. A. T., tetanus antitoxin; TQ (time), tourniquet; P, plasma; B, blood; and A, atropine. It is to be emphasized that this skin marking is in addition to the regular medical tag, which should contain the full record of treatment.

Emphasis should be placed on the practice of uncovering tourniquets applied to limbs. It is vitally important that a tourniquet not be hidden or lost under bandages or blankets. First-aid men applying a tourniquet should leave it uncovered, should fill out the medical tag completely, and should mark the patient's forehead with a large "TQ," and the time of application.

EVACUATION AND TRANSPORTATION

In-Plant.—The stretcher-team, previously described, is the basic unit in evacuation. Members should be trained in standard first-aid procedures, with special emphasis on the carrying and transportation of the injured. They should be thoroughly familiarized with the physical layout of the plant, the locations of the aid stations, and the designated portals of evacuation. They should be instructed as to their duty stations, the source from which their orders will come, and their place in the medical chain of command. The number of stretchers and stretcher-teams recommended is as follows:

In plants of 100 or less: 1 for each 25 people
In plants of 100 to 500: 1 for each 50 people
In plants of 500 or over: 1 for each 100 people

These should be considered minimum requirements. Where the plant population is concentrated in a small area, with the greater likelihood of a large number of

casualties, the table of requirements should be adjusted accordingly. Similarly, where the plant population is scattered over a wide area, in many buildings, it may be advisable to exceed the minimum suggested in order that stretchers be available in each building.

Plans must be made in advance to determine the in-plant routes by which the injured may be transported to portals of evacuation. Such designated thoroughfares should be kept clear at all times. Specific areas should be assigned specific routes and portals of evacuation in order to minimize in-plant traffic congestion. Consideration should be given to the possibility of elevator failure and the effect of such failure on plans for evacuation. Alternate methods of moving the injured from upper floors must be established, in advance, to be activated if the use of elevators is denied.

External.—Portals for the removal of the injured from the plant should be designated in advance. Each should be capable of handling the expected traffic flow from the portion of the plant specifically assigned to it. One of the major problems to be anticipated in the removal of the injured from industrial plants will be the lack of suitable vehicles. Regular ambulances are far too few in number for the anticipated demand. Most company trucks are suitable for use as improvised ambulances, since stretchers can be borne on the floor of the truck. Personal motor cars will be useful in the evacuation of the ambulatory injured.

Personnel accepting the injured for removal at the portal of evacuation should be familiarized with the location of the next echelon receiving point (i. e., hospital, improved hospital, receiving station, etc.) and should be thoroughly familiar with several alternate routes for reaching such receiving point.

Under the Master Civil Defense Plan, the Philadelphia metropolitan area is divided into 47 zones. Each zone is to be serviced by one unit of the First Aid and Ambulance Service (FAAS). The FAAS has area responsibility for transportation from the scene of disaster to an improvised hospital and from there to an existing hospital, evacuation embarkation point or other appropriate place. Contact with FAAS may be made through Division V (Room 602, City Hall Annex, Philadelphia, Locust 7-0290). Because of the probability that FAAS—or any other single organization—will be unable to handle the casualty load completely, it is imperative that individual companies perfect plans in advance to become, as far as possible, self-sufficient in the evacuation of their casualties.

Marking of emergency vehicles is outlined in CDCP Bulletin, May 28, 1953, Subject: "Regulations Regarding the Identification and Movement of Vehicles on Emergency Routes During Civil Defense Emergencies," to which reference is made.

SUMMARY

This guide for establishing the medical portion of a company civil defense plan emphasizes that a specific program for an individual company must be tailored to the particular needs of that company and its place in the overall community defense plan. This guide should be of use to industrial physicians in their civil defense planning.

Ninth and Columbia Ave. (22).

FUTURE OF POSTGRADUATE MEDICAL EDUCATION

Douglas D. Vollan, M.D., Chicago

This is the last of a series of eight articles, which together constitute the report of a two and one-half year Survey of Postgraduate Medical Education by the Council on Medical Education and Hospitals of the American Medical Association. The survey included a questionnaire study of a large random sample of practicing physicians as well as detailed analyses of the courses offered by all of the numerous sponsoring institutions and organizations. The first seven articles appeared in THE JOURNAL *Feb. 26, March 12, March 26, April 9, April 23, May 7, and May 21, 1955.*

The rapid rate at which the science and art of medicine are developing makes it apparent that undergraduate medical education can only lay the foundation upon which a lifetime of learning is to be erected. The continuing education of a physician throughout his professional life is absolutely essential if he is to use judiciously and effectively the new developments in the diagnosis, treatment, and prevention of disease that are necessary for adequate medical care. Medical education is continued while in practice mainly through reading, professional contacts, attending medical society and hospital staff meetings, and attending formal postgraduate courses. Although most physicians utilize the first three types of continuation, only about two-thirds of the physicians surveyed attend postgraduate courses. It is increasingly evident that postgraduate education is an essential element in the professional lives of most physicians, for it offers a unique opportunity for systematic study, with both continuity and specific objectives.

The future of postgraduate medical education depends upon solving the problems delineated in this article. Excellent aspects of individual programs may constitute exceptions to some of the generalizations presented in this article, which refer to the over-all problems revealed by the survey.

POSTGRADUATE MEDICAL EDUCATION LACKS DIRECTION

At present postgraduate medical education is suffering from a lack of clearly defined objectives. This is partially due to its being confused with graduate medical education, which is designed to prepare physicians for full-time specialty practice or for advanced academic degrees. Postgraduate education, on the other hand, is primarily for the purpose of keeping physicians abreast of their own field of practice or expanding their knowledge of one aspect of it. If postgraduate education is to develop soundly, it is essential to have the major purpose clearly understood, the specific objectives delineated, long-range plans to achieve the goals, and effective leadership. The major purpose of postgraduate medical education can be simply stated as bridging the gap between medical re-

A complete description of the samples, returns, and methods of the survey will be made available as an appendix in the reprint edition of the series to be published later this year.

Formerly Assistant Secretary, Council on Medical Education and Hospitals, American Medical Association, with the assistance of the Council's Committee on Postgraduate Medical Education, composed of Drs. Donald G. Anderson, James M. Faulkner, Edward L. Turner, and Edward H. Leveroos.

search and medical practice. This should aid in raising the general level of medical practice. The specific objectives of postgraduate education are of two basic types: refresher courses, designed to review fundamental medical principles and make new information available to physicians; and special postgraduate courses, designed to assist the physician in gaining a somewhat deeper understanding of a particular aspect of his own field that may loom large in his practice. Special courses may also serve as an approach to part-time specialization in regions where certain specialties are not represented (such training should not be construed as a short-cut to fully qualified specialization). At present most postgraduate education is of the special type, although the greatest need is for the refresher type. This indicates a need for a general reversal of the present proportions of the two types of courses.

Long-range planning of complete postgraduate programs to meet the total educational needs within a given region can be accomplished either by a selection of courses in many fields or by comprehensive programs covering all areas of medicine in rotation. The fact that many physicians presently are deterred from postgraduate courses by the unsuitability of the subjects presented may be counteracted by careful analyses of needs based upon morbidity data and questionnaire studies within any given region. An annual national evaluation of major developments in each of the fields of medicine could be of considerable assistance to postgraduate program directors. Preparation of refresher courses should include appropriate proportional emphasis on new developments of immediate practical use to the physicians, information on available services of local specialists and special medical centers, clinical developments in the experimental stage, and new knowledge of basic science that may or may not prove to be of practical use.

Sound leadership can best be provided by qualified medical educators who can devote either full time or substantial portions of their time to this work and by the assistance of standing committees or advisory groups having continuity of membership over several years. In order to facilitate exchange of ideas in this field, conferences of postgraduate program directors should be held regularly at least once a year. It is recommended that a permanent national advisory council on postgraduate medical education be established to give guidance to this field. Such a group should have representation from the American Medical Association, the Association of American Medical Colleges, the Federation of State Licensing Boards, the American College of Physicians, the American College of Surgeons, the American Academy of General Practice, and any other groups vitally concerned with postgraduate education.

GENERAL PRACTITIONERS ARE NEGLECTED

The vast majority of postgraduate offerings at present are oriented toward the specialties, despite the fact that almost two out of three practicing physicians are general practitioners (including the 15% who are general practitioners giving part-time special attention to a specialty). General practitioners have a greater need than specialists for postgraduate work for several reasons, including their lack of graduate training in many instances, the breadth of their field, and their relative isolation from medical schools and from special medical society and hospital affiliations. General practitioners generally do not take part in as much continuation education as their specialist colleagues, but the survey indicated general practitioners desire to double or triple the amount of time they currently spend in formal postgraduate education. The greatest single need in this field today is for more and better refresher courses for general practitioners. These should be planned specifically for them in cooperation with local general practice groups. Effective refresher work for general practitioners requires sincere sympathetic understanding of the problems of general practice on the part of the specialist teacher, who must translate his own intimate knowledge of his field into terms of practical use by the general physician.

QUALITY OF COURSES IS NOT CONSISTENT

Although there are many fine individual programs in the United States, the quality of postgraduate instruction varies considerably and all too frequently is poor. This is an important deterrent to physicians who wish to continue their education. It is largely due to undue emphasis on enrollment figures, haphazard preparation of courses, and the practical limitations that often obstruct educational ideals. This malady of postgraduate education can only be corrected by an emphasis on quality. To improve the quality of postgraduate medical education, it must be recognized that the physician is a special type of student requiring special educational approaches. He is not motivated by a degree or certification as a reward. He is a mature individual with considerable prior knowledge of his subject. Although physicians expressed a marked preference for educational methods in which they actively participate—especially the seminar—didactic teaching in the form of lectures and demonstrations is more useful in postgraduate education than in other phases of medical education because practicing physicians can readily relate information gained to experience in practice. Since those most in need are least likely to raise questions following didactic sessions, little is really lost by large attendance at such sessions. The faculty time conserved in this way could be effectively used in small group discussions or individual clinical case work with physicians. No one method can be expected to meet all of the needs. At this stage flexibility is more desirable than standardization.

It is essential that postgraduate education be given a dignified place in the whole realm of medical education. This can best be achieved by making postgraduate teaching one of the primary and definite responsibilities of medical-school faculty members whose recognized duties include such activity. Faculty for postgraduate teaching should be selected with as much or even more care as the faculty for undergraduate teaching. It is estimated that the addition of the equivalent of one full-time faculty member in each of the five major clinical departments of every medical school in the United States would be sufficient to effectively undertake the projected postgraduate teaching load suggested later in this article. Systematic evaluation of postgraduate teaching methods will do much to sharpen the effectiveness of postgraduate programs. Evaluation procedures should be built into newly

developing long-range programs. Eventually some form of accreditation procedures may be necessary in this field, and a study of this subject might be one of the functions of the national advisory council suggested earlier in this article.

MANY PHYSICIANS DO NOT CONTINUE THEIR EDUCATION

Almost a third of the physicians studied in this survey reported having received no formal postgraduate education for at least five years. The low level of postgraduate course utilization by these physicians is important because this group has fewer hospital and medical society affiliations thus being deprived of three sources of continuing education. The inertia of this group—that most in need—is largely responsible for the gap between the highest and the lowest levels of practice, thereby creating an undesirable double standard. The best potential cure for this condition is an improvement in the direction and quality of postgraduate courses so as to attract these physicians. There are at least three other factors to be considered. The greatest single deterrent to postgraduate course attendance is the lack of someone to care for the physician's patients while he is away. Group-practice units have a ready-made answer to this problem. For physicians in solo practice the state or county medical societies should consider setting up a locum tenens pool to furnish needed coverage for physicians attending postgraduate courses. Some form of outside subsidization might be made available to young solo practitioners in rural areas to allow them to get away for postgraduate work periodically. Another answer to this problem is to take the education to the physician.

The second factor involves finding ways to attract physicians to postgraduate education. Many methods of "frosting the cake" have been tried, but these are often likely to detract rather than to add to the educational value of the course. Certificates can be used to encourage attendance. These should only be issued to those who have satisfactorily completed the course and should always exactly indicate the number of hours of education the certificate represents, thus obviating their misuse as evidence of specialty certification. Consideration should be given to a system of certifying general practitioners who have taken a minimum amount of postgraduate work each year for a given number of years (e. g., one month per year for 10 years). This would give them a goal to achieve, which could be a significant inducement to further study. Required periodic attendance at postgraduate courses or periodic examination for continuation of the license to practice has been suggested. This would be a drastic measure but might be feasible if handled properly. Since it is the responsibility of the profession as a whole to keep itself at a high level of attainment at all times, this is a matter that could be considered by the proposed national advisory council.

Fundamental to all of these considerations is the responsibility of the medical schools to develop in their students the attitude and habit of lifelong learning. This is one of the essential responsibilities of the undergraduate curriculum. It is important to note that physicians who take residencies and other graduate work are more likely to take more postgraduate work than those who conclude their formal medical education with the internship. An over-all consideration of the present postgraduate needs in the United States suggests that specially designed refresher programs should be set up wherever possible for recent graduates on a regular annual or biennial basis in the hope that in the years ahead the balance of the practicing physician population will have developed the habit of continuing their study. In the meantime, separate programs for those already in practice should be continued and materially improved.

PHYSICIAN'S TIME IS LIMITED

The practice of medicine generally consumes 60 hours or more per week. Over 20% of this was spent in various forms of continuing education by the physicians who responded to this survey. Most of this is accounted for by reading and professional contacts, which are integrated with daily professional activities. It is obvious, therefore, that the time that physicians can devote to postgraduate education is limited. Physicians indicated the unsuitable times at which courses are given and the multiplicity of other meetings to be major deterrents to postgraduate course attendance. The potential solution to this latter problem is fourfold. First of all, every effort should be made to utilize efficiently the time physicians can give to continuing their education. Wherever possible, multiple hospital and medical society meetings in an area should be consolidated. Physicians in this survey expressed the desire to increase moderately the amount of time they spend in reading and professional contacts. It is important to note that they also desire to increase markedly their formal postgraduate education by reducing the time they spend at medical society and hospital staff meetings.

The second element is concerned with the arrangement of courses as such. Concentrated courses are most numerous and are also the type preferred by most physicians. The average duration of such courses is over two weeks, whereas the maximum time that most physicians in this survey could absent themselves from practice at one time was indicated to be about one week. The most suitable length for short courses is two or three days, preferably in the middle of the week. Intermittent courses are particularly desirable to physicians residing in the city in which courses are given and for "circuit" and other types of extramural teaching. In addition some "tailor-made" or specially arranged courses are needed. A third approach is to take the education to the physician wherever and whenever the nature of the material to be presented permits. The most efficient use of faculty and physician time should be the rule in such sessions. Indirect means of communication should be employed for didactic presentations wherever possible. Television is undoubtedly one of the most useful of such mediums and if organized on an ample scale could be used effectively and economically as one of the principal methods of bringing knowledge of new medical advances to the profession. Those areas that are not reached in this way may find correspondence and recorded courses a helpful adjunct.

No matter which of the above approaches is used, it is essential that the physician himself budget his own time to include an adequate amount of postgraduate education, especially since his greatest utilization is during his busiest years of practice. It would help the institutions offering postgraduate courses if they could plan comprehensive refresher programs or series of selected courses several years in advance for predictable numbers of physicians. Refresher education should be taken at no longer than five year intervals, and preferably every year or two. Although the average physician in this survey spent the equivalent of about four days per year in postgraduate education, he expressed his desire to average about 10 days in such work. It is suggested that about a week or 50 hours per year is a reasonable minimum amount of refresher postgraduate education for each practicing physician.

POSTGRADUATE OPPORTUNITIES ARE TOO FEW AND MALDISTRIBUTED

At present over 2,000 postgraduate courses are offered in the United States each year. Together these constitute about 140,000 hours of instruction. Although there is already a demand for more postgraduate opportunities, it is apparent that, if all 170,000 practicing physicians took the suggested minimum of 50 hours each year, there would be a need to more than double the number of hours offered (assuming an average ratio of 25 students to each instructor). More important perhaps is the present maldistribution of postgraduate courses. Ninety per cent of the hours are concentrated in six states, and most of these are in a few large cities. Since a higher percentage of physicians in small towns take postgraduate courses than do their city colleagues, postgraduate opportunities should be more equitably distributed, especially in the southern states. Although a few postgraduate medical schools (especially those affiliated with undergraduate medical schools) will continue to supply special needs in large cities, it is the responsibility of the undergraduate medical schools to carry the major burden of postgraduate teaching. New medical school construction should make specific space and equipment allotments for postgraduate instruction in order to meet the increasing needs in the years ahead. These should include, wherever possible, living accommodations for physicians taking courses. In addition, hospitals in outlying areas should be developed as foci of local postgraduate teaching through affiliation with a medical school in the region.

DUPLICATION OF EFFORT RESULTS IN WASTE

There are over 300 different institutions and organizations in the United States known to be engaged in postgraduate medical education in one way or another. Among these are more than a score of different types of organizations, including undergraduate, graduate, and postgraduate medical schools, health departments, general and special medical societies, hospitals, clinics, assemblies, and voluntary health agencies (almost 90% of the postgraduate hours are offered by the schools). This diversity of sponsorship results in duplication of effort as to the content, faculty, facilities, and scheduling of courses within given areas. The net effect is inefficient utilization of teaching resources and frustration on the part of the physician who has to choose from among a large selection of competing offerings. Although competition is in itself not harmful, in this case it results in wasted time, effort, and money.

Since most of the various sponsoring organizations have something to contribute to postgraduate education, their individual efforts can be most useful if coordinated through a single clearing house in a given area. Such an agency could collect information on the educational resources of the area, coordinate the existing postgraduate programs, organize additional ones where indicated, and publicize the courses to physicians in the area. Generally a state is too small for the effective operation of such a coordinating body, but the whole nation is too large. Physicians in this survey indicated that they cross state borders for about half of their postgraduate education, and almost half of the medical school faculty time given to postgraduate instruction is outside of the state in which the school is located. It is therefore recommended that several regional postgraduate coordinating agencies be developed in the United States, under the control of the organizations and institutions engaged in postgraduate education within the region. Such a coordinating agency would need a full-time medical director and staff who could spearhead the development of postgraduate education in its region.

POSTGRADUATE EDUCATION IS ECONOMICALLY INSECURE

At the present time postgraduate medical education is financed on a very insecure basis. In most cases the sources of income are not clearly evident and the distribution of expenses is clouded by hidden costs. Very few institutions and organizations have definite budgets for postgraduate education, but, for those on which adequate data were available, the average cost per hour of instruction offered is about $20. Some institutions claim to make a profit on their courses, while others report a consistent deficit. Postgraduate education should be maintained on a self-supporting basis once it has become firmly established.

Sound approaches to this problem require careful and definite budgeting on an annual basis. Present data indicate that approximately half of the costs of postgraduate education are accounted for by faculty salaries and honoraria. It should be possible to reduce the apparent high administrative costs by efficient organization, long-term planning, and coordination of efforts. It is estimated that the total amount of postgraduate education suggested in this article would cost about 20 million dollars a year, including full remuneration for all faculty and administrative services. At present, funds for postgraduate education are obtained in approximately equal proportions from the sponsoring institution, contributing agencies, and tuition fees. Over 90% of all courses charge some fee, averaging a little over a dollar per hour of instruction. Physicians in this survey indicated that they preferred

to pay the major expense of postgraduate education themselves. Tuition fees do not detract from enrollment and can be expected eventually to meet most of the costs of postgraduate education. The greatest costs to the physician—and important deterrents to postgraduate attendance—are the expense of travel and maintenance while attending courses and the loss of income from practice during such periods. These ancillary costs to the physician could be significantly reduced by more widespread distribution of postgraduate opportunities and the use of such mediums as television to bring the education to the physician. Since postgraduate education can be considered an essential element in the professional lives of physicians, the costs involved should be considered legitimately deductible business expenses for income tax purposes. A definite ruling on this by the Internal Revenue Service would be a help at this time.

In the meantime, and until physican fees can more nearly meet the total cost of postgraduate education, it is highly desirable for contributing agencies such as foundations, voluntary health agencies, health departments, and industry to make funds available to the organizations that offer courses, leaving the program preparation to responsible medical educators. The proposed regional coordinating agencies might be appropriate groups to act as collecting and distributing centers for such funds.

PROGNOSIS

Postgraduate medical education has come to be looked upon as one of the three basic phases of medical education. The formalization of postgraduate education has proceeded slowly and irregularly in a period when the undergraduate and graduate phases were making rapid strides. With the latter phases now well established, the time is ripe for the further development of postgraduate medical education. Physicians already have come to recognize the importance of formal postgraduate study as evidenced by their preferring it above all other methods except reading for continuing their education. The demand will increase, and the medical educators should be prepared to meet it. With sound direction, high-quality courses given when and where they are needed for persons who need them can be expected to become a major educational undertaking, requiring faculties, facilities, and funds. These needs should not be met at the expense of undergraduate medical education but should be separately provided for. Additional studies of teaching methods, content needs, evaluation procedures, accreditation, means of stimulating attendance, and the financing of postgraduate medical education will be needed to fill in the gaps of our knowledge to date.

In the years to come it may be anticipated that the United States will be divided into a number of large regions, each including subregions in which particular medical schools will be responsible for refresher courses. Individual medical schools may plan their undergraduate curricula specifically to develop basic attitudes and thinking processes appropriate to the assumption that new factual material will be transmitted to their students in regular annual return sessions of a week or 10 days in the school. It is also possible to visualize national restricted television programs bringing knowledge of the new advances of medicine into the homes or offices of physicians at regular weekly times. A few strategically located postgraduate schools and many undergraduate medical schools will be offering longer courses in special subjects, with small seminar, laboratory, and clinical sessions.

The future of postgraduate medical education is indeed bright, though it may be necessary to discard much of what exists in order to build anew on sound foundations. The problems are complex. The goal is worthy of the efforts it will require. The challenge will require the wholehearted cooperation of medical educators and practicing physicians.

COUNCIL ON PHARMACY AND CHEMISTRY

REPORT TO THE COUNCIL

The Council on Pharmacy and Chemistry has authorized publication of the following article.

R. T. STORMONT, M.D., *Secretary.*

APPRAISAL OF DRUGS INTENDED TO ALTER SUBJECTIVE RESPONSES, SYMPTOMS

Henry K. Beecher, M.D., Boston

There is the optimistic hope that one can proceed in evaluating subjective responses, symptoms, exactly as he would objective change. There is an understandable reluctance because of the tedious and expensive procedures involved in the former instance to grant that this is very far from the case. Subjective responses are symptoms. They are evident only to the individual experiencing them; they can be imparted to an onlooker generally only through a cooperative statement by the subject. Objective responses, on the other hand, are made evident in physical change, or can thus be made evident, to the senses of an onlooker; they are physical signs; they can be mechanically recorded. The measurement of subjective alteration can be done with acceptable precision. It would be foolish to insist that one can obtain great accuracy in this area. It is probable, however, that one can obtain a greater degree of accuracy than some have supposed. Six laboratories scattered over the country are engaged in using the techniques that were first described in this laboratory or modifications of them. Good agreement is reported. The following example [1] indicates the order of magnitude of the error encountered.

Two series of flasks, six in each, contained unknown solutions. The task was to find which flask of one series was comparable in analgesic power to which flask of the other. At the end we found one series had contained always 10 mg. morphine per ml., and in the other series the concentration of morphine had varied. On graphing the paired doses against differential percentage of pain relief, we found the 10 mg. morphine of one series to be equivalent to 10.8 mg. in the other, an 8% error.

From the Anesthesia Laboratory of the Harvard Medical School at the Massachusetts General Hospital.

The observations on which this report is based were made possible by the long-continued support of the Committee on Drug Addiction and Narcotics of the National Research Council from funds contributed by a group of interested pharmaceutical manufacturers, from the Medical Research and Development Board of the U. S. Army, and, early, from the U. S. Public Health Service.

1. Keats, A. S.; Beecher, H. K., and Mosteller, F. C.: Measurement of Pathological Pain in Distinction to Experimental Pain, J. Appl. Physiol. 3: 35-44 (July) 1950.

Calculation of the regression lines adds 2% for a total error of 10%. This is about the same as the error found in most objective measurements in man. In the latter case this degree of accuracy is more easily achieved than when subjective responses are involved.[1]

Such work requires a very special set of controls. This is not really surprising since, by definition, symptoms are subjective and records of them can therefore easily be influenced unconsciously by the investigator's attitude. The controls are tedious and annoying, but this fact does not give the observer license to ignore them. In a word, the special controls necessary for sound work in the field of appraising and quantifying subjective responses have as their chief purpose the elimination of bias. This is not so simple as it may sound; neither is it particularly difficult. There is, it is true, more than one way to appraise drugs having the effects under discussion; but the only method known to the writer, other than the application of the controls mentioned, is the hundreds-of-cases-years-of-effort technique. Even so, this alternative method is notoriously inaccurate despite its time-consuming features. Costly and tedious as the methods and controls are when based upon sound practice, they are far less costly and certainly give answers in far shorter time than when drugs are distributed widely and used without any discernible controls. Also, in the method of wide distribution, the public bears the cost; in the sounder approach, the pharmaceutical industry pays. It does not seem unreasonable that the industry bear the cost of such evaluation. This obligation has been recognized and accepted by most of the leading companies.

Literature sent to the Council on Pharmacy and Chemistry and many articles in current journals, which are intended to present the merits and uses and limitations of new drugs, often seem to imply that there is another way to discover the capacities of these agents. The new drugs are distributed to a relatively few investigators who try out the agents in a dozen or so patients without any controls and without the masses of data that might have protected them from error. Very often no real plan of observation is set up; but positive reports are made nevertheless, based upon casual findings, for example upon the statements of the ward personnel whose main attention is given to other duties, or upon reports of the patients themselves in response to leading questions. It is perhaps time to recognize that such a method is not satisfactory; worse, it leads to misinformation.

CLASSES OF DRUGS COMMONLY INVOLVED

The commonest classes of substances having as their chief purpose change in symptoms are sedatives, hypnotics, analgesics, antitussives, antipruritic and antiemetic agents, ego depressants, drugs intended to alter mood, and topical or local anesthetics. A source of trouble in this field, but one that as yet has not received the attention it deserves, is the rather astonishing effectiveness of placebos in relieving or significantly improving subjective responses. This is not a newly observed fact. More than two decades ago Evans and Hoyle [2] found in their excellent study that the pain of angina pectoris was satisfactorily relieved by a placebo in 38% of their cases. Severe postoperative pain was satisfactorily relieved in over 30% of our cases studied recently.[3] Extensive search of recent literature revealed that in 15 studies involving a total of 1,082 patients, the average effectiveness rate of placebos was 35.2 ± 2.2, with good constancy from one subjective response to another. Consider what this means in practical terms. Dr. Lasagna and I have shown that the average maximum safe dose of morphine, 15 mg. per 70 kg. of body weight, will satisfactorily relieve only 75% of the patients with severe postoperative wound pain.[4] Placebos will do about half as well. It seems evident that to attempt to compare two analgesic agents both of which are more effective than a placebo, but which still may differ from each other, will require more than a casual, uncontrolled approach.

METHOD

In work extending over a period of years, more than a score of subjective responses have been studied. This work has been summarized in two papers.[5] Pain has served usefully as a prototype for guidance in study of other subjective responses, and the principles of control worked out with pain apply as well to work on other subjective responses. The basic method remains that evolved in 1949 [6] and improved on in 1950.[1] Special methods have been developed for hypnotics,[7] for euphoria,[8] and for antitussives.[9] In essence this method requires the use of a group of cooperative individuals who report on the sensation under study. Arbitrary criteria of change in or relief of a disturbing symptom are set up. The necessary controls are the use of the "double unknowns" technique, that is, neither subject nor observer must know what or when test agents are employed. Placebos are inserted, also as unknowns. A standard of reference is employed (such as morphine in studies of analgesic agents). The order of administration of the test drugs, standard of reference, and placebo is randomized. Correlated data are used; that is, all agents are employed in all subjects, and mathematical validation is used to establish supposed differences of effect between agents. In all new problems and in many other cases this is better done by a professional statistician who has first-hand familiarity with the work in progress.

Man is, of course, essential for study of subjective responses. As a working hypothesis it seems necessary at present to carry the requirements farther than this and to say that therapeutic agents designed to modify subjective responses arising in disease or trauma must be studied where they arise spontaneously. The supporting evidence for this hypothesis is presented and discussed elsewhere.[10] No convincing evidence has yet been presented that subjective responses arising in disease or trauma can be successfully mimicked. It must be emphasized that this is merely a useful working hypothesis, not yet disproved; however, in view of the data presented it seems unwise to ignore the possibility that this may turn out to be more than a hypothesis when further tests have been made. If it turns out that the use of pathological material is as essential as now seems may be the case, it is probable that the explanation will lie in the 60-year-old concept of the importance of the reaction component of suffering.[11]

SOME SPECIAL PROBLEMS

Most Advantageous Area for Study.—The ideal period for study is that where the dose-effect curve is changing rapidly; in this region differences between small doses can be brought out most sharply. This is, in a sense, a mathematical certainty, as far as differences in effect of given doses go. We have often considered the advantages of working with pain if we could deal routinely with an A.D. 50 (satisfactory pain relief in 50% of

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10. (*a*) Hardy, J. D.; Wolff, H. G., and Goodell, H.: Pain—Controlled and Uncontrolled, Science **117**: 164-165 (Feb. 13) 1953. (*b*) Beecher, H. K., in discussion on Hardy, J. D., and others: ibid. **117**: 166-167 (Feb. 13) 1953. (*c*) Beecher, H. K.: The Subjective Response and Reaction to Sensation: The Reaction Phase as the Effective Site for Drug Action, Am. J. Med., to be published. (*d*) Beecher.[5]

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the patients). Practically, however, there is considerable limitation of this possibility, for if, over a rather long period, the medications are often ineffective in controlling the severe postoperative wound pain that serves as our material, the investigator begins to lose the cooperation of the ward personnel. The best pain for study is incompletely relieved pain, whether dealing with moderately severe pain only partially relieved by small doses of morphine or very severe pain nearly maximally relieved by large doses of morphine. The first situation is best, for it is then that the dose-effectiveness curve is changing rapidly.

Maximum Power.—Even with powerful narcotics like morphine the "average pain" of a group of individuals in severe, steady pain cannot be completely relieved with reasonable (safe) doses. The effectiveness of narcotics is shown by the inverse relationship between severity of pain and percentage of individuals relieved. It must be appreciated that the maximum safe pain-relieving power, when steady, really severe pain is under consideration, is represented roughly by an A.D. 75 (75% of the group satisfactorily relieved).[4] This limitation appears to exist with the drugs used to alter other subjective responses.

Use of Correlated Data, Paired Doses of Drugs.—When subjective responses are under study, the experiment should be arranged so that as many variables as possible cancel out by the use of correlated data, that is, the placebo pitted against the active agent in the same individual, or two doses of the same drug compared in the same individual, under comparable circumstances. Specifically, persistent individual peculiarities or characteristics can be made to cancel out in many cases when such paired doses are used. The quite unsatisfactory alternative to this technique is to use a tremendous mass of data. It is always best to have more than two agents in any study to minimize chance detection of the placebo.

"Double-Blind" Technique and Drug-Wise Subjects.—The elimination of bias on the part of the subject or the observer emerges clearly as a basic and essential requirement, yet some investigators still insist that only highly trained subjects with long experience are useful. The contradiction in these two views seems evident when any drugs are under study that reveal their use to the individual by side-effect, nearly always true of agents designed to produce subjective therapeutic effect. The widely experienced subject quickly learns to identify the "aura" of a narcotic, for example, or the barbiturate effect with its "hangover." Thus, with experienced subjects, it becomes impossible to preserve the essential unknowns technique in such areas. This is quite obvious in the use of analgesics to control pain; it is also true with the smaller doses of narcotic used to control cough. Highly trained subjects come to have a vested interest in the outcome, whether scientific or pecuniary (continuance as paid subjects) or egoistic (personal attention); the failure to eliminate their bias can have devastating results. To be sure, learning on the part of the subject is always a hazard to be watched for and minimized with proper controls, but the hazard is far greater with the experienced group.

Subjective Effect Revealed by Objective Change.—A cooperative statement by the subject must take first rank as an indication of the existence of a subjective response or of change in it. Supporting evidence or, in areas of sensation very difficult or impossible for the subject to estimate or communicate, useful presumptive evidence of a concomitant subjective effect can sometimes be revealed in objective change as, for example, when the face of the patient in pain assumes a relaxed, cheerful appearance denoting comfort. In other studies it has been possible to demonstrate the mental effect of a drug by alteration in psychomotor tests [12] and to record objectively alterations in sleep pattern by changes in ratios of alpha and delta wave frequency in electroencephalograms.[13] Cough is objective evidence of a subjective desire to cough and vomiting is evidence of nausea (in normal individuals). In our laboratory, the use of a tachistoscope to study the effects of drugs on the time to recognize "charged" words is proving useful in studying subjective change through objective manifestation. But the cooperative statement of the subject remains by far the most useful criterion of change in subjective response.

Appraisal of Side-Effects.—Comparison of the side-effects of any two therapeutic agents can be made soundly only when therapeutically equally effective doses are considered. It is curious how often this obvious requirement is ignored. Another problem in this area arises with the assumption that the side-effects of narcotic agents for example, can be appraised easily in sick individuals. Some toxic effects of narcotics (notably nausea and vomiting) are much like the common afflictions of sick people. Thus it becomes difficult, unless special teams of observers are employed and hundreds to thousands of cases are evaluated, to get valid information. Even with the most careful, full-time observation we could devise, it was impossible to evaluate the side-effects of these agents in sick, postoperative patients. The casual observations of busy doctors or ward nurses is without value, a point not adequately appreciated. We have been obliged to resort to the use of normal subjects for the study of toxic effects. This is not completely satisfactory since it is possible that pain, for example, may be associated with a lower incidence of nausea produced by morphine in the sick than in the well. Here, just as with appraisal of the primary therapeutic effect, the "double unknowns" technique, insertion of placebos as unknowns, randomization, use of correlated data, and the mathematical validation of differences must be used if the true incidence of toxic effects is to be established.

SUMMARY

Procedures essential to the appraisal of drugs designed to modify subjective effects and symptoms must be established. A group of cooperative individuals who report on the response under study is essential. Arbitrary but clear criteria of effectiveness of a given drug must be established. Important are the use of the "double unknowns" technique, the use of placebos also as "double unknowns," the use of a standard of reference for comparison, randomization of order, correlated data, and mathematical validation of differences. The appraisal of side-effects requires these same controls, and just as when therapeutic power of two agents is under comparison so also must equally potent (therapeutically) doses be used for comparison of side-effects, an obvious point too little taken into account.

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Clinical Course of Rheumatoid Arthritis.—In recent years systematic follow-up studies have clearly indicated that the physician should be more optimistic, as shown by the fact that a third to a half of rheumatoid arthritics eventually show marked improvement and less frequently apparent recovery. In our experience about one-fourth of patients with unequivocal rheumatoid arthritis follow a distinctly intermittent course during the first five to ten years of the disease, in the absence of specific therapy. In most of those with intermittent courses, attacks of active arthritis of less than a year's duration are interspersed with clinical remissions averaging two years in length. An intermittent course is not necessarily a mild course. Each attack may contribute to the accumulation of irreversible changes, even though the patient has few or no signs of active disease between exacerbations. On the other hand, some patients who have signs and symptoms of active disease continuously for many years may show surprisingly few irreversible changes and little disability. Based on information gained largely from hospital or clinic experience, the course of the disease may be summarized as usually one of steady or intermittent progression, although complete or nearly complete remissions may occur at first and certain patients recover without significant residual disability, even after years of active disease.—W. E. Reynolds, M.D., and C. L. Short, M.D., The Clinical Manifestations of Rheumatoid Arthritis, *Medical Clinics of North America,* March, 1955.

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COPPER METABOLISM IN HEPATOLENTICULAR DEGENERATION

Hepatolenticular degeneration (Wilson's disease) is a progressive disease of early life characterized by cirrhosis of the liver, degenerative changes in the basal ganglions, and the presence of Kayser-Fleischer rings in the cornea. It was first described as a disease entity in 1912 by Kinnier Wilson, who suggested that the neurological manifestations might be due to a toxic substance elaborated in the diseased liver.[1] In recent years, defects in copper metabolism and urinary chemical abnormalities have been recognized in this disease. These findings have lent support to the hypothesis that the disorder is due to an inborn error of metabolism, a viewpoint supported by recent genetic studies indicating the disease is inherited in an autosomal recessive manner.[2]

While sporadic reports of abnormal tissue accumulation of copper in hepatolenticular degeneration had appeared since 1913, the possible role of copper in this disorder attracted little attention until 1948, when reports of demyelinating diseases in sheep on copper-deficient diets led to the determination of copper in patients with various neurological disturbances. These studies confirmed the earlier reports on increased copper in the liver and brain in hepatolenticular degeneration and showed for the first time an increased urinary excretion of copper in this disease. Subsequently it was shown that the plasma copper concentration is low in this disorder, that excretion of copper in the feces is reduced, and that the patient is in positive copper balance. In addition to the defect in copper metabolism, two other biochemical abnormalities have been noted in patients with hepatolenticular degeneration. In 1948, Uzman and Denny-Brown [3] reported that aminoaciduria was invariably present, while Uzman and Hood in 1952 reported an increased urinary excretion of dicarboxylic amino acid peptides.[4] The aminoaciduria is present even in the absence of manifest liver disease and is unaccompanied by a rise of blood amino acids and therefore is not secondary to the liver damage.

These findings raise the question whether the abnormalities in copper metabolism and in the excretion of amino acids and peptides are separate and distinct metabolic defects or whether a causal relationship exists between them and if so which is the primary derangement. There is general agreement that certain if not all of the pathological changes in this disorder could be due to copper accumulation in the tissues. Thus chronic manganese and mercury poisoning may give rise to somewhat similar neurological disturbances; liver cirrhosis and renal damage have followed copper administration in animals; and pigmented corneal rings similar to the Kayser-Fleischer ring may accompany cataracts developing after copper-containing foreign bodies become lodged in the eye. Furthermore, dimercaprol (BAL) administration to patients with Wilson's disease not only results in greatly increased urinary excretion of copper but also apparently may lead to temporary improvement in the neurological state and hepatic dysfunction.[5] However, there is no unanimity of opinion as to whether the copper deposits arise from a defect in copper metabolism or, secondarily, from some error in amino acid metabolism.

Uzman [6] has advanced the theory that the basic defect in hepatolenticular degeneration lies in the handling of dicarboxylic amino acid peptides, due possibly to a disturbance of tissue proteolytic enzymes. He suggests that these peptides form strong complexes with copper, leading to excessive accumulation of copper in the tissues, that the excess copper excreted in the urine is bound to these peptide residues, and that these residues compete with amino acids for reabsorption by the tubules and hence cause the aminoaciduria characteristic of the disorder. According to this theory, the neurological disturbances may be the result of copper deposition in the brain while the hepatic lesions could be due to copper deposition or alternately to the persistent loss of amino acids in the urine.

Other investigators consider the primary defect is one of disturbed copper metabolism. While not too much is known concerning copper metabolism in man, it is generally considered that the normal daily intake is 2 mg. of copper per day and that copper is essential for certain enzymatic systems. Copper is present in the plasma chiefly in nondialyzable form. The largest fraction normally is ceruloplasmin, an alpha-2 globulin containing eight tightly bound atoms of copper per molecule. A variable but smaller amount of copper is bound in a less secure fashion to an albumin fraction, while a trace only is in a dialyzable state.

In patients with hepatolenticular degeneration, the ceruloplasmin fraction is abnormally low while the more loosely bound copper fraction is elevated. Furthermore, when radioactive copper is given to these patients, only a very small fraction becomes incorporated in the globu-

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lin fraction, indicating a decreased synthesis of ceruloplasmin.[7] This has led to the suggestion that the primary defect in the disease lies in the synthesis of this plasma protein and that the low ceruloplasmin level in some way leads to either abnormally high absorption of copper or abnormally low excretion of copper and eventually to storage of copper in the tissues. This in turn leads to the characteristic pathological lesions in the brain and liver and to functional impairment of the kidney, manifested by aminoaciduria and peptiduria. Finally, the accumulated tissue copper becomes chelated by amino acids and peptides and is thus excreted in increased amounts in the urine.[8]

These extensive biochemical studies have led to certain suggestions regarding treatment of these disorders. Absorption of copper can be decreased by the oral administration of ion exchange resins or of potassium sulfide, which forms the unsoluble copper sulfide, while mobilization of copper from the tissues can be effected by the parenteral use of dimercaprol, casein hydrolysates, or the calcium disodium salt of ethylenediaminetetraacetic acid (edathamil calcium-disodium).[9] Unfortunately, the spontaneous fluctuations in this disease make it hard to evaluate the clinical value of these procedures, and admittedly efforts directed at removing copper can at best be considered only palliative until the metabolic error in this disorder has been definitely determined. Indeed, depriving the patient of excess copper might conceivably result in further reduction of the synthesis of essential copper-containing metabolites; however, the day seems close at hand when the metabolic defect in this bizarre disease will be fully elucidated. Certain neurological disturbances secondary to metabolic defects such as vitamin B_{12} and thyroxin deficiencies have yielded to specific therapy. It does not seem unrealistic therefore that hepatolenticular degeneration before long may be much better controlled.

THE BATTLE AGAINST SMOG

Although smog formation is not limited to the Los Angeles basin, the problem in that area is serious, and as a result in November, 1953, the Air Pollution Foundation was incorporated. This nonprofit organization supports scientific research and cooperates with the public and other agencies in learning the facts about smog. It is in no sense an enforcement agency but makes the results of its studies available to such agencies. Furthemore, it does not duplicate services already rendered by other agencies, governmental or private.

It is now possible to differentiate between smog and air pollution. Smog irritates the eyes and damages plants, but on some days, when the amount of atmospheric pollution is comparable as judged by reduction in visibility and air movement is apparently at a standstill, these effects are absent. The reason is thought to be a difference in concentration of certain pollutants, but the nature of this difference is not yet known. The materials out of which smog evolves are believed to arise chiefly from motor vehicles, industrial wastes, and the burning of rubbish, in that order. Incomplete combustion is an important factor in all three. The most widely accepted theory at present is that smog results from photochemical reactions involving hydrocarbons, oxides of nitrogen, and sunshine. It has been estimated that not counting motor vehicles about 20% of the pollutants poured daily into the air comes from domestic incinerators and the burning of various fuels for heating private dwellings. The greatest problems arise in those areas where, as in Los Angeles, a natural atmospheric trap exists. Cool air moving in gently from the ocean cannot pass the mountains and cannot rise through the superimposed blanket of warmer air. Under such conditions vast amounts of pollutants that would ordinarily be widely dispersed accumulate until toxic concentrations are reached.

Although the need to remedy this situation was widely recognized, it was also found that the most effective results could not be obtained without collecting much more fundamental knowledge of the problem than is now available, and this was the motivation for the establishment of the Air Pollution Foundation. Studies are being carried out to facilitate anticipation of smog conditions so that public warnings may be issued, to determine the composition and amounts of gases emitted by incinerators, to find ways to improve the combustion and reduce exhaust gases from motor vehicles, to discover motor fuels that when burned will give lower concentrations of pollutants, and to learn many other important facts.

While the results of these projects are being awaited, enforcement agencies should vigorously apply such measures as have already been enacted and urge law-making bodies to keep the laws pertaining to air pollution as nearly representative of current scientific knowledge as possible. Open fires for burning rubbish should be prohibited, if not at all times at least at such times as atmospheric conditions are especially favorable to smog formation. Provisions for the systematic collection and sanitary disposal of all combustible rubbish will go far toward ameliorating the problem. The public can help reduce motor vehicle exhaust fumes through proper adjustment of carburetors, regular cleaning of spark plugs, prompt replacement of worn piston rings, and by more gradual acceleration while driving.

Smog not only affects health and property but also deters the industrial development of an area where it prevails. Cooperative efforts such as those of the Air Pollution Foundation and the governmental agencies in the Los Angeles basin are heartening and should result in lasting benefits. One of the most commendable features of the foundation is its resolve to disband when it has found the answers to the questions it has set itself to study. Victory in the battle against smog cannot, however, come from research alone, nor can it come from enforcement efforts or legislation without the wholehearted cooperation of the public. If every person puts his own house in order without waiting for a police order or for his neighbor to do it first the problem can be greatly reduced. The longer we wait to engage this enemy the more difficult the fight will be.

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ORGANIZATION SECTION

STATEMENT BY DR. GEORGE F. LULL ON S. J. RES. 1

Honorable Estes Kefauver
Chairman, Subcommittee on Constitutional Amendments
Committee on the Judiciary
U. S. Senate
Washington 25, D. C.

Dear Mr. Chairman:

I would like to take this opportunity on behalf of the American Medical Association to submit for your consideration our views concerning S. J. Res. 1, 84th Congress, which is currently being studied by your committee.

The American Medical Association vigorously endorses the principle of a Constitutional amendment designed to restore to the states and to the Congress those legislative powers which, until recent years, had been thought to be secured to them by the Constitution. We have no preference as to the language best suited to accomplish this purpose but feel, as citizens and physicians, that recent developments make such an amendment vitally necessary.

It has become plain to us that both the states and the Congress have suffered an erosion of their powers through past usage and the potential future use of the treaty power and the Executive Agreement. Whether such a shift of power to the Executive branch of the government was foreseen and intended by the framers of the Constitution or whether it arises from faulty construction of that document by the Supreme Court is immaterial. It is a fact that today the President and a small minority of the Senate can (*a*) override state constitutions, laws, and customs in areas never before supposed to be proper subjects for federal regulation; (*b*) expand the legislative powers of Congress beyond those delegated in the Constitution, and (*c*) legislate by treaty rather than through the open processes of a representative Congress. Most alarming of all, the President alone can do all of these things by the use of an Executive Agreement.

It serves no useful purpose to reiterate here the convincing arguments already made on behalf of such an amendment as we support or to demonstrate the error and confused thinking into which its opponents have fallen. We believe that reasonable men, reviewing the record, can only conclude that the case for the amendment has been more than adequately made. We desire, however, to add to that record the specific reasons for our concern as physicians and to invite the attention of the Committee to a striking demonstration of the fact that Senate ratification of treaties provides a protection more illusory than real.

Treaties are seldom negotiated under circumstances which permit persons interested an opportunity to learn what is being done in their behalf or to express their opinions on the subject. They are presented to the Senate in finished form and under circumstances making alteration of the treaty language virtually impossible. Hearings are normally cursory, without copies of the treaty concerned being made available for public scrutiny. Consequently, propositions which would receive full and complete hearings if advanced in the normal legislative form are not even discovered by the public until after they have become domestic law. Their true impact is only realized after litigation. It is no secret that the Senate customarily transacts business without a quorum present. There is no prohibition against the ratification of treaties by voice vote with only a few Senators on the floor.

As an example, we remind the Committee that on June 14, 1952, the Senate of the United States ratified two conventions and a treaty with only two Senators present. The Senator who was on the floor did not even vote, the sole affirmative vote being cast by the Senator presiding. Only a gentleman's agreement prevents a repetition of this travesty today. Surely, our fundamental rights require a much stronger safeguard.

Other witnesses before this Committee have clearly indicated the threat to state and national sovereignty and to our rights as citizens in proposals advanced by the United Nations such as the International Criminal Court, the Genocide Convention, the Covenants on Human Rights, the Convention on Gathering and Transmission of International News and Right of Correction and, indeed, the theory of certain individuals that the Charter of the United Nations can be broadened by interpretation. While we are also concerned with these dangers as individual citizens, the medical profession is particularly disturbed by the activities of two of the international organizations in which the United States participates.

Both the World Health Organization and the International Labor Organization are engaged in international operations affecting the practice of medicine. The International Labor Organization alone has produced 103 conventions to date, a large number of which, if adopted, would drastically alter the practice of medicine and the physician-patient relationship as it exists in the United States today. Included are conventions governing maternity protection, workmen's compensation, weekly rest, medical examination of young persons, sickness insurance, invalidity insurance, migration for employment, social security, and medical examination.

It is not surprising, in view of the composition of the I. L. O., that its conventions are instruments of statism totally repugnant to the American philosophy of the relationship of the people to our government. If given effect as internal law in this country, the principles embodied in these conventions would remake the social and economic structure of the United States. We stress that this would be accomplished not through our Constitutional legislative processes but through the activities of a foreign body.

The conventions adopted by the I. L. O. are unique in another way. Under its constitution these conventions have the status of treaties and must be considered for ratification as treaties by the member governments, including the United States. Despite the fact that the content of these conventions is repugnant to American thinking, the United States is one of the very few nations of the world in which ratification alone will give effect to the provisions of the conventions as internal law.

It is appropriate to remind the Committee that the United States government delegates to the International Labor Organization, who presumably follow instructions from the Executive branch of the government, have cast their votes in support of some of the most radical of these conventions. We have discussed earlier the manner in which one Senator ratified two conventions and a treaty in 1952. That same year both United States government delegates to the International Labor Organization convention voted in favor of its Maternity Convention. One of the U. S. government delegates who cast our vote in favor of this convention sat at that time, and sits today, in the United States Senate. Only a gentleman's agreement prevents him from ratifying the convention on behalf of the Senate and bringing it into effect as internal law in the United States.

The constitution of the World Health Organization provides that regulations passed by its assembly "shall come into force for all members after due notice has been given of their adoption by the Health Assembly except for such members as may notify the Director General of rejection or reservations within the period stated in the notice." This international organization thus has the power to enact legislation binding as internal domestic United States law without the knowledge, much less the approval, of the Congress.

We are concerned, therefore, that propositions which would never be approved by the American people if they were advanced as legislative proposals and subjected to full hearings may become law by the ratification of one of these numerous conventions by an ill-advised minority of the Senate. We believe that it is imperative that Constitutional protection be restored.

The American Medical Association is properly concerned over the degree to which the use of treaties has already invalidated state laws relating to the practice of medicine. We are concerned that treaties or Executive Agreements may, in the future, even more seriously transfer the state regulation of medical practice

into the hands of those who are unaware of the requirements or desires of the people of the several states.

We invite the attention of the Committee to the actual operation of paragraph 2 of Article I of the Treaty of Friendship, Commerce and Navigation between the United States and Italy, signed at Rome on Feb. 2, 1948. The following communication from the Italian ambassador in connection with this treaty shows how the laws of several states, without the knowledge or consent of the people, were secretly altered by treaty:

Ambasciata d'Italia
Washington, D. C.

October 29, 1952

Bureau of Examining Boards
State Department of Health
Lincoln 9, Nebraska

Dear Sirs:

Paragraph 2 of Article I of the Treaty of Friendship, Commerce and Navigation signed at Rome on February 2nd, 1948, between the United States and Italy, establishes that, in conformity with the applicable laws and regulations, the "nationals of either High Contracting Party, be permitted to exercise commercial, manufacturing, processing, financial, scientific, educational, religious, philanthropic and professional activities, except the practice of law."

This Embassy contacted some time ago the Department of State in order to have the American interpretation of the abovementioned article in respect to the exercise of the medical professions in the United States on the part of Italian citizens.

The Department answered as follows:

"The Treaty provisions would require the States, each according to its own procedure, to admit Italian nationals to the practice of medicine on terms as favorable as those on which each admits its own citizens or other nationals of the United States. Such treaty rights would be enforceable by Italian nationals in the State and Federal courts of justice. *State laws or regulations forbidding aliens to practice medicine, or providing conditions more burdensome than for the State's own citizens, would be inoperative with respect to Italian nationals.* The examining and licensing authorities remain, however, the State's own and nothing in the Treaty would require recognition of degrees of Italian educational institutions or the rulings of Italian examining or licensing authorities."

The Department added that it did not possess detailed information relating to the procedures adopted by the various States, and suggested that the Embassy address itself to the American Medical Association of Chicago.

The Association replied to the Embassy's request informing that the best course to take was to apply to the Medical Examining and Licensing Boards of the various States.

This Embassy will, therefore, be very grateful to you for kindly answering the following questions:

1) Aside from the question of the recognition of academic titles, are there in your State laws or regulations forbidding foreigners to practice medicine or dentistry?

2) If so, what steps have been taken to render inoperative such laws and regulations with respect to Italian nationals?

3) What procedure should an Italian citizen follow to obtain recognition in your State of the specific treaty rights which put him in the same position of a national of the United States in regard to the condition of citizenship, when applying for the exercise of medicine or dentistry?

This Embassy expresses in advance its best thanks for the courtesy of your reply.

Very truly yours,
Signed: Alberto Tarchiani
Ambassador of Italy

It is plain to us that if the treaty power can invalidate the citizenship requirements of state licensure, it can also invalidate state medical education and professional ability requirements. No less an authority than the Dean of the Harvard Law School, an opponent of the amendment, confirmed this fact in a colloquy with Senator Bricker during the current hearings, as follows:

"*Senator Bricker.* Now, a couple of years ago we had here for ratification a treaty with, I believe, Italy or Israel, to the effect that nationals of that country, whichever it was, could practice their profession in this country regardless of alienage. Now, many states have provisions under their constitutions requiring citizenship, so that a lawyer must take an oath as an officer of the court to practice and he must practice under the limits imposed by that state, the limited rights of citizens of that state, and the Senate saw fit to recognize that in an exception to the ratification protecting the rights of the states in that treaty.

"Now, if they had not done that, in your judgment, would the qualification of the state on this alienage, the limits, have been nullified by that?

"*Mr. Griswold.* I would expect so, Senator, and for that reason it seems to me very appropriate that either the negotiating authority or the Senate in consenting should make that qualification.

"*Senator Bricker.* I think so, too; but the negotiating authority had not done it.

"*Mr. Griswold.* That is true. My guess is they had overlooked the particular application, what they were trying to do was to try to protect people who wanted to be barbers or—

"*Senator Bricker.* Lawyers.

"*Mr. Griswold.* Probably. And I think that perhaps they did not think of all of the applications.

"*Senator Bricker.* Do you mean that the State Department in negotiating the treaty would not think of all of the applications?

"*Mr. Griswold.* Certainly not, no one ever foresees all of the applications or implications of a statute or a treaty that we adopt.

"At any rate, I am with you that the matter of qualification for admission to the Bar should be reserved to the state and I am glad that the Senate attached that reservation to the treaty.

"*Senator Bricker.* Had they not, then the state provisions would have been nullified?

"*Mr. Griswold.* In my judgment, that is true.

"*Senator Bricker.* One last question. If in that treaty there had been a statement to the effect that a graduate of a college of medicine or law in that foreign country, whatever it was, whatever country it might be, must be taken as a qualification in this country for admission to the Bar or license to practice medicine, then it would have been the law of the country?

"*Dean Griswold.* Yes, if it adopt such provision.

"*Senator Bricker.* If it adopt such provision; there is no distinction in principle?

"*Mr. Griswold.* No, I think that is an appropriate matter for the exercise of the treaty-making power, and I feel that that power has always been wisely exercised by the President and the Senate."

Three times in recent years the House of Delegates of the American Medical Association, the governing body of the organization, has unanimously voted to support the principle of a constitutional amendment of the type under consideration by your Committee. Not only as citizens, but as physicians, we have become aware of the threat to our individual rights and fundamental beliefs which exists as a result of recent interpretations of the Constitution. We are convinced that an enlightened citizenry, able to express itself on legislative matters to its state and federal representatives, will never permit the enactment of unwise laws and regulations tending to destroy the ability of the profession to furnish the high quality of medical care which our people now enjoy. We are equally convinced that a serious threat to that standard of medical care now exists because of the ability of those who know little about the subject to wittingly or unwittingly bring about major changes in the teaching and practice of medicine through the secret process of treaties and Executive Agreements. We urge the submission by the Congress to the people of a constitutional amendment designed to restore their constitutional right to have their domestic laws enacted by an open and public legislative process.

Sincerely,
GEORGE F. LULL, M.D.
Secretary and General Manager.

ANNUAL MEETING

Joint Committee of the National Education Association and the American Medical Association

This is the oldest joint committee of either of the parent organizations—the American Medical Association and the National Education Association—having been formed in 1911. The functions of the committee are as follows:

1. To provide a means for interchange of information between the professions of education and medicine on matters related to the health of children and youth.

2. To develop effective liaison between the various departments and divisions of the A. M. A. and the NEA on school health matters.

3. To serve as a board of review on controversial issues with medical and educational implications, to which educators, physicians, and others concerned with school health may submit inquiries in regard to policy on health matters.

4. To promote cooperation and to foster helpful relationships among medical, educational, public health, and other groups concerned with school health.

5. To participate with other qualified or recognized groups having a continuing interest in school health, in developing and implementing sound principles and programs.

6. To formulate and issue statements setting forth principles and policies as the best conclusions available from research, knowledge of child growth and development, or experience and opinion in the field.

7. To publish pertinent materials on school health designed to meet evident needs and to furnish guidance for those concerned with the health and education of children and youth.

8. To cooperate with appropriate groups in furthering adequate preparation in school health for administrators, teachers, and health service personnel.

Several new publications of the Joint Committee have recently been released. *School Health Services,* companion volume to *Health Education,* which was published late in 1954, has had wide acceptance by both the medical and education professions. A revised edition of "The Nurse in the School," released in February, 1955, has been widely distributed and evidently meets the needs expressed by nurses and administrators. A series of five pamphlets on sex education for children, parents, and others concerned with the education of youth in this area will be available soon. A new publication of the Joint Committee on the health aspects of the school lunch program is nearing final form. This material, which gives emphasis to sanitary principles, is expected to meet a need frequently expressed in this field.

At its annual meeting in Chicago at A. M. A. headquarters in March, the committee passed the following resolutions and recommendations:

Safety in Sports.—The Joint Committee on Health Problems in Education is continually mindful of the need for close supervision of the welfare of school boy and girl athletics. Vigilance is the price of safety, and, hence, all efforts to protect against injury in such sports as baseball, football, Lacrosse, soccer, hockey, and others should be encouraged and maintained.

The development of the plastic mask in football, the batter's helmet, and the adoption of rules in any game, the purpose of which is to protect the player, is herewith endorsed.

Furthermore, the Joint Committee urges schools and colleges throughout the nation to provide medical supervision at all contests and practices where injury is likely to occur. The committee also urges the provision of appropriate facilities and suitable forms of insurance protection to meet the need when injury does take place.

Health of School Personnel.—The Joint Committee on Health Problems in Education recognizes that, although remarkable progress has been made in the control and eradication of tuberculosis, the disease still remains a major threat. Tuberculosis may be contracted in childhood from school personnel with active but sometimes unknown or unsuspected disease. Transmission of the disease is possible through the frequent and continuous close personal contact of the classroom and other association during the school day.

The Joint Committee therefore strongly urges boards of education to make evidence of freedom from tuberculosis a condition of employment. Boards of education and boards of health should work cooperatively to the end that freedom from the disease shall also be a continuing condition of employment.

The committee further recommends that, where necessary, enabling legislation that will permit boards of education to require annual chest x-rays of school personnel as a part of a complete health examination program be passed by local and state governing bodies. Such regulations should include policies for leave of absence when active disease is found and return to work when the safety of children and other associates is again assured.

Medicines in Athletics.—In 1953, the Joint Committee on Health Problems in Education, with reference to the influence of oxygen administration to athletes, concluded that "valid scientific evidence in support of the value of oxygen in athletic competition is lacking." The committee was of the opinion then and continues to feel that the anticipation of help from oxygen might encourage the athlete "to exert himself beyond the limits he has learned to respect from instinct and experience," and, therefore, recommended "that the use of oxygen for such purposes be disapproved."

Instances similar in nature have been reported involving the administration of drugs to stimulate athletes to greater activity or to narcotize an injured part for purposes of continuing play. These practices along with mass medicine, such as the administration of vitamins and other products, in the opinion of the committee constitute poor medicine and worse education. They likewise represent an unfortunate ethical practice. The committee therefore believes that such practices should be disapproved.

Release of Children from School.—Requests to release children from school present a serious problem to school administrators and teachers. Such requests are made for many and varied reasons, and careful discrimination in each case becomes more and more justified.

The child is entrusted to the school by the parent not voluntarily but because education is compulsory. Compulsory education is entirely consistent with the purposes of democracy, and it places a grave obligation on school administrators to be completely assured of the validity of request for the release of children and of the identity of those who make the request. The general attitude of school administrators is that the school is responsible for the child, and responsible to his parent, and that the brief hours in school are of such importance to the growth and development of the child that they should be guarded from interruption.

The following general rules of procedure offer appropriate safeguards in the interest of the health and safety of children:

1. Children should be released from school only to their parents or to persons authorized by their parents. The school principal should check carefully to make certain that the person claiming to represent the parent is so authorized. The check may be made by telephoning the parent for confirmation or by having the child identify the caller.

2. Children should be released to police officers only if a warrant is issued.

3. In cases of family dissension (divorce, step-parents, grandparents of separated parents, etc.) the request often comes to prohibit one party of the conflict from taking the child from school. Such requests should be honored only if legal status is established. Permission should be given in certain cases for the person thus prohibited to see the child in the principal's office. The principal should remain close by. Great care, deep understanding, caution, and tact must be exercised by school administrators in these situations.

4. Children should be released for days of religious observance upon request of their parents. A note signed by the parent must be brought prior to the day of observance.

5. Teachers should be instructed not to admit otherwise unauthorized visitors to the classroom without a note from the office. Signs on school doors should so instruct the visitor.

6. Principals should make every effort to prevent the use of school lavatories by the general public during hours when children are in school.

7. An elementary school child should be sent home only with the parent or with another authorized and reliable adult if the parent is not available.

8. Requests for released time for dental and medical appointments are honored. Mutual understanding on this point is essential among parents, physicians, dentists and school administrators if the best interest of the child is to be served. Appointments after school and on nonschool days are desirable. Circumstances may make that impossible. "What is best for the child" is the determining factor.

9. School authorities should weigh each individual case, because the school is obligated to protect the health and the safety of all its pupils.

It is recommended that these or similar procedures be made a part of board of education rules and regulations.

Members of the committee are Ray O. Bjork, M.D., Helena, Mont., Chairman; Ruth Grout, Ph.D., Minneapolis, Vice-Chairman; Fred V. Hein, Ph.D., Chicago, Secretary; Charles Outland, M.D., Richmond, Va.; Mazie V. Scanlan, Atlantic City, N. J.; Carl Wilzback, M.D., Cincinnati; Marjorie Eastabrooks, M. S. P. H., Olympia, Wash.; Delbert Oberteuffer, Ph.D., Columbus, Ohio; Herman M. Jahr, M.D., Omaha; H. Austin Snyder, M. Ed., Sayre, Pa.

FEDERAL MEDICAL LEGISLATION

Eleventh Installment, First Session, 84th Congress

Water Pollution Control Act

Senators Martin (R., Pa.), Duff (R., Pa.), Knowland (R., Calif.), Kuchel (R., Calif.), Wiley (R., Wis.), and Chavez (D., N. Mex.), in S. 890, Congressman Dondero (R., Mich.), in H. R. 3426, Congressman Blatnik (D., Minn.), in H. R. 5296, and Congressman Fulton (R., Pa.), in H. R. 5369, would extend and strengthen the Water Pollution Control Act and establish permanent water pollution control activities in the Public Health Service. The Surgeon General is directed "[*a*] after careful investigation, and in cooperation with other Federal agencies, with State water pollution control agencies and inter-state agencies, and with the municipalities and industries involved" to "prepare or adopt comprehensive programs for eliminating or reducing the pollution and improving the sanitary condition of surface and underground waters . . . [*b*] encourage cooperative activities by the States for the prevention and control of water pollution; encourage the enactment of improved and, so far as practicable, uniform State laws relating to the prevention and control of water pollution; [*c*] encourage compacts between States for the prevention and control of water pollution . . . [*d*] promote the coordination of research, investigations, experiments, demonstrations, and studies relating to the causes, control, and prevention of water pollution." He is authorized to make grants-in-aid to public or private agencies and institutions and to individuals for research and training and for demonstrations. Appropriations would be determined periodically for the program. The maximum appropriation for grants-in-aid for water pollution control for the first two years would be 2 million dollars each year. The allotment to the states would be made on the basis of "(1) the population, (2) the extent of the water pollution problem, and (3) the financial need of the respective States." The maximum federal share is fixed at 66⅔% and the minimum at 33⅓%. A 15 member advisory board would consult with and make recommendations to the Surgeon General on policy matters. Seven of these would be appointed by the President and could not be officers or employees of the government. Eight would represent branches of government. These bills were referred to the respective committees on public works.

Grants for Water Pollution Control.—Senator Neely (D., W. Va.), in S. 982, and Congressman Mollohan (D., W. Va.), in H. R. 4010, would authorize construction grants to any state, municipality, or interstate agency for the construction of necessary treatment works to prevent the discharge by any such state or municipality of untreated or inadequately treated sewage or other waste into interstate waters or their tributaries. Grants would not exceed 50% of the cost of the project. These bills were referred to the respective committees on public works.

The summary of federal legislation was prepared by the Washington Office of the American Medical Association.

Cancer Research

Congressman Staggers (D., W. Va.) has introduced two bills essentially the same, H. R. 4583 on March 2, and H. R. 5118 on March 21, that would authorize and request the President to undertake to mobilize at some convenient place in the United States an adequate number of the world's outstanding experts and coordinate and utilize their services in a supreme endeavor to discover means of curing and preventing cancer. The earlier bill was referred to the Committee on Foreign Affairs and the later bill to the Committee on Interstate and Foreign Commerce. An authorization of 100 million dollars is contained in both measures. They are identical with H. R. 477 by Congressman Rooney (D., N. Y.), previously reported.

COMMITTEE APPOINTED TO WORK WITH LABOR ON HEALTH

A special committee of the American Medical Association has been appointed to meet with labor and management in a joint effort to solve the medical problems of working people. The committee was appointed by Dr. Dwight H. Murray, Napa, Calif., Chairman of the A. M. A. Board of Trustees, after a recent proposal by A. M. A. President Dr. Walter B. Martin, Norfolk, Va. Dr. Martin's proposal was supported by A. J. Hayes, Washington, D. C., vice-president of the American Federation of Labor and president of the International Association of Machinists.

Dr. Martin, in proposing the committee, told the A. M. A.'s 15th Annual Congress on Industrial Health that labor, industry, and medicine were in practical agreement on many health objectives. He said that better liaison could and should be created among interested groups to solve working people's medical problems. The committee includes Dr. Elmer Hess, Erie, Pa., A. M. A. President-Elect, chairman; Dr. James R. McVay, Kansas City, Mo., a member of the A. M. A. Board of Trustees and former chairman of the A. M. A. Council on Medical Service; Dr. Joseph D. McCarthy, Omaha, Chairman of the A. M. A. Council on Medical Service; and Dr. William P. Shepard, New York, Chairman of the A. M. A. Council on Industrial Health and second vice-president of the Metropolitan Life Insurance Company.

DR. LARSON NEW PRESIDENT OF BLOOD FOUNDATION

A. M. A. Trustee Leonard W. Larson was honored recently when he was elected president of the Blood Foundation, which is sponsored by the American Red Cross, the American Society of Clinical Pathologists, the American Hospital Association, the American Association of Blood Banks, and the American Medical Association. Dr. Larson has served continuously as Chairman of the A. M. A. Committee on Blood since November, 1948. He also served as chairman of the liaison committee of all of the sponsoring organizations in creating a national blood program.

MARCH OF MEDICINE—TELEVISION

"March of Medicine" will do a double reporting job when the medical television show is presented over the full NBC-TV network at 9:30 p. m. EDT Tuesday, June 7. Originating from the American Medical Association's Annual Meeting in Atlantic City, the program will cover highlights of the session. In addition, the role of the pathologist on the medical care team will be demonstrated by scenes originating at the new Armed Forces Institute of Pathology and Walter Reed Hospital, Washington, D. C.

FILM ADDED TO TV LIBRARY

"Night Call," a film originally produced for the "Cavalcade of America" television program, has been added to the film library of the Committee on Medical Motion Pictures. Recording a dramatic 24 hours in the life of a doctor, this 26-minute film may be secured from the Committee.

MEDICAL NEWS

CALIFORNIA

Meeting of Medical Evangelists.—The annual Alumni Postgraduate Convention of the College of Medical Evangelists, Loma Linda-Los Angeles, which this year celebrates its 50th anniversary, was held Feb. 15-17 at the Biltmore Hotel in Los Angeles. Highlighting the convention banquet was an address by the Hon. Walter H. Judd, Congressman from Minnesota, a former medical missionary. The list of lecturers included: Drs. Samuel F. Marshall and Everett D. Kiefer, Boston; Major Gen. Leonard D. Heaton, Washington, D. C.; Drs. Curtice Rosser and Vincent D. Vermooten, Dallas, Texas; Dr. L. Emmett Holt Jr., New York; Dr. William G. Leaman Jr., Philadelphia; Dr. Lewis F. Morrison, San Francisco; Dr. Howard C. Stearns, Portland, Ore.; and Dr. John H. Lawrence, Berkeley, Calif.

Dr. Reimann Goes to Java.—Dr. Hobart A. Reimann, who recently returned from Lebanon after a two year tenure as professor of medicine at the American University of Beirut, has been appointed visiting professor of medicine at the University of Indonesia Faculty of Medicine in Djakarta, Java. The school is equipped as a modern institution staffed by Indonesians and visiting American faculty members. Dr. Reimann's appointment is in connection with an affiliation between the University of California School of Medicine, San Francisco, and the Faculty of Medicine at Djakarta, underwritten by the Foreign Operations Administration. He will act in a consultant, teaching, and advisory capacity. En route to Java, Dr. Reimann planned to address the Medical Society of Honolulu and to visit the medical schools in Tainan, Formosa, and Manila.

CONNECTICUT

Award to Dr. Goff.—At the annual meeting of the American Academy of Orthopaedic Surgeons in Los Angeles, the annual award of the Kappa Delta National Women's Sorority (a certificate and $1,000) was bestowed on Dr. Charles Weer Goff, Hartford, because of the new correlations that he developed relative to the osteochondroses of children and youths. Presented in a monograph, "Legg-Calvé-Perthes Syndrome and Related Osteochondroses of Youth," this work was done in conjunction with Yale University School of Medicine, New Haven, and the Newington Home and Hospital for Crippled Children, Newington.

DELAWARE

Society News.—Newly elected officers of the Delaware Academy of General Practice include: Dr. Martin B. Pennington, Wilmington, president; Dr. Eugene J. Szatkowski, Wilmington, president-elect; Dr. Roger B. Thomas, Richardson Park, vice-president; Dr. Morris Harwitz, Wilmington, secretary; and Dr. Joseph J. Davolos, Wilmington, treasurer.

DISTRICT OF COLUMBIA

Fellowship in Gastroenterology.—Applications for a fellowship in gastroenterology, including training in esophagoscopy, gastroscopy, and liver biopsy techniques, commencing July 1, are being considered at Georgetown University Hospital, Washington, D. C. Applicants must have a minimum of two years' approved training in internal medicine. Address inquiries to Dr. Irving B. Brick, Associate Professor of Medicine, Department of Medicine, Georgetown University Hospital, Washington 7, D. C.

The Washington Clinic and Mitchell Foundation.—The building housing the Washington Clinic and the James F. Mitchell Foundation for Medical Education and Research, at Wisconsin and Western Avenues, N. W., was officially opened Feb. 22, at a dedicatory luncheon at the Chevy Chase Club. Among the speakers were Dr. Charles W. Mayo, Rochester, Minn.; Sen. Lister Hill of Alabama, co-author of the Hill-Burton Act; Dr. Preston A. McLendon, Washington, D. C., president of the Medical Society of the District of Columbia; Dr. Frank E. Wilson, Director, Washington Office, American Medical Association, substituting for Dr. Walter B. Martin, Norfolk, Va., President of the American Medical Association, who found it impossible to make the scheduled appearance; and Dr. G. Valter Brindley Sr., Temple, Texas, regent of the American College of Surgeons and president of the American Cancer Society. The building has offices for 26 physicians, with provision to accommodate a staff up to 50. Sharing the building with the Washington Clinic is the James F. Mitchell Foundation for Medical Education and Research, established in honor of Dr. James F. Mitchell, until a few years ago chief of staff of Central Dispensary and Emergency Hospital.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education, and public health. Programs should be received at least three weeks before the date of meeting.

FLORIDA

Society News.—At the annual meeting of the Florida Radiological Society, Dr. Hugh G. Reaves, Sarasota, was elected president; Dr. James T. Shelden, Lakeland, vice-president; and Dr. Donald H. Gahagen, Fort Lauderdale, secretary-treasurer.

Name Professor of Obstetrics.—Dr. James H. Ferguson, formerly assistant professor of obstetrics and gynecology at Tulane University of Louisiana School of Medicine, New Orleans, was appointed professor and chairman of the department of obstetrics and gynecology at the University of Miami School of Medicine, Coral Gables, effective June 1.

IDAHO

Personal.—Dr. Alfred M. Popma of Boise recently went to São Paulo, Brazil, as official delegate to the International Cancer Congress, where he presented two papers and presided at one of the general meetings. Late in August Dr. Popma was installed as president of the Rocky Mountain Radiological Association at a meeting in Denver.

Dr. Cromwell Honored.—The Blackfoot Rotary Club and Rotary Anns recently observed "Jim Cromwell Night" in honor of Dr. James O. Cromwell, superintendent of State Hospital South. The speaker was Dr. C. H. Hardin Branch of the University of Utah School of Medicine, Salt Lake City. Mayor Earl J. Miller delivered the address of welcome. Among the guests were Dr. Cromwell's parents, Dr. and Mrs. John H. Cromwell of Gooding.

ILLINOIS

Cancer Mortality.—According to the American Cancer Society, Illinois division, 1953 set a new high record for cancer mortality in Illinois, the total number of deaths from all forms of cancer reaching 15,159 for the entire state. The figures, from the bureau of vital statistics, Illinois department of health, show that the total number of deaths from every cause for 1953 was 96,607, making the death rate of cancer 1 out of every 6.3 deaths. The cancer deaths for 1953 show an increase of 173 over the 14,986 reported for 1952 and an increase of 374 over the 1951 figure. Of the statewide mortality rate from cancer, 6,688 persons were residents of Chicago, and 8,471 were residents outside the city.

Chicago

Honorary President for Life.—Dr. Anton J. Carlson, Frank P. Hixon Distinguished Service Professor Emeritus at the University of Chicago, was recently elected honorary president for life of the National Society for Medical Research, which he has served as president since its inception in 1946. Dr. Carlson turned the active leadership of the society over to Dr. Lester R. Dragstedt,

chairman, department of surgery, University of Chicago. Dr. Maurice B. Visscher, chairman, department of physiology, University of Minnesota Medical School, Minneapolis, was elected vice-president. Dr. Ralph W. Gerard, director of research, Illinois Neuropsychiatric Institute, continues as secretary-treasurer.

Children's Artery Bank.—At the ceremonies inaugurating the children's "artery bank" at the Children's Memorial Hospital, the Chicago Heart Association presented a check for $1,000. The bank will make available graft replacements for heart operations to correct birth defects in children.

Personal.—Dr. Kalman Gyarfas, clinical associate professor of psychiatry at the University of Illinois College of Medicine, was recently named superintendent of the Chicago State Hospital, replacing Dr. Duncan D. Campbell, who has retired after serving as acting director.——Dr. Charles B. Huggins, professor of surgical urology at the University of Chicago School of Medicine, delivered the 10th annual Hanau W. Loeb Lecture, "Relationship of the Steroids to Cancer," at the St. Louis University School of Medicine, Feb. 24, under the sponsorship of Phi Delta Epsilon, medical fraternity of St. Louis University. ——Dr. Jack Allan Weiss discussed "Indications of Tracheotomy in Medicine and Surgery" before the Cuban chapter of the American College of Chest Physicians, March 15, in Havana, Cuba.——On March 18 Dr. Louis N. Katz, director of the cardiovascular department, Medical Research Institute, Michael Reese Hospital, and professorial lecturer in physiology at the University of Chicago, delivered the sixth annual Burton D. Myers Lecture at the Indiana University School of Medicine, Indianapolis. His lecture on arteriosclerosis was given under the sponsorship of Beta Eta chapter, Nu Sigma Nu fraternity. ——Dr. John F. Pick was the principal speaker at the annual meeting of the second district medical society of the Texas Medical Association, April 21, in Midland, Texas, where he read a paper on "The Human Equation in Plastic Surgery." Dr. Pick was also speaker at the banquet, where his subject was "The Meaning of the Human Face."——Dr. Manuel G. Spiesman, associate professor of proctology at the Chicago Medical School, recently returned from a combined meeting of the Mexican branch of the International Academy of Proctology and the Mexican Gastroenterological Society in Mexico City, where he lectured on a new approach to the diagnosis and surgical treatment of anal fissure.——Dr. Edward L. Turner, Secretary of the A. M. A. Council on Medical Education and Hospitals, was honored recently when he was elected as an associate trustee of the University of Pennsylvania, Philadelphia. Shortly before his election, he was appointed a member of the university's Board of Medical Education and Research.

INDIANA

Society News.—Officers of the Indiana Roentgen Society for the coming year are: Dr. John A. Robb, Indianapolis, president; Dr. Jack L. Loudermilk, Fort Wayne, vice-president; and Dr. Chester A. Stayton Jr., Indianapolis, secretary-treasurer.

Named Professor of Genitourinary Surgery.—Dr. Robert A. Garrett, who has served as acting head of the department of genitourinary surgery at Indiana University School of Medicine, Bloomington-Indianapolis, has been named to the chairmanship of the department and advanced to the rank of professor. He succeeds Dr. Henry O. Mertz, who, after 16 years as chairman, has been given the rank of professor emeritus. Dr. Mertz plans to continue his research studies relating to urologic problems in children.

KANSAS

State Medical Election.—The Kansas Medical Society recently elected the following officers: Dr. John M. Porter, Concordia, president; Dr. Clyde W. Miller, Wichita, president-elect; Drs. Conrad M. Barnes, Seneca, and Barrett A. Nelson, Manhattan, first and second vice-presidents respectively; Dr. John L. Lattimore, Topeka, treasurer; Dr. James A. Butin, Chanute, secretary; and Dr. Orville R. Clark, Topeka, editor of their journal.

Cardiovascular Laboratories Dedicated.—A ceremony and open house of the McIlvain Biochemical Cardiovascular Laboratories were held recently in the medical sciences building of the University of Kansas Medical Center, Kansas City. During the brief ceremony preceding conducted tours of the research laboratories, the speakers were Dr. Franklin D. Murphy, chancellor of the university; Dr. W. Clarke Wescoe, dean of the school of medicine and director of the medical center; Dr. Sam E. Roberts, clinical professor of otorhinolaryngology and physician to Mrs. Frederic Ervine McIlvain, who became interested through Dr. Roberts in setting up a trust fund provision for medical research; Dr. E. Grey Dimond, professor of medicine and chairman of the department, as well as director of all the cardiovascular laboratories; Dr. George L. Curran, established investigator of the American Heart Association, working in cholesterol, lipid, and trace metal metabolism in relation to artery disease; Dr. Santiago Grisolia, director of the McIlvain Laboratories, whose appointment as McIlvain investigator was announced last summer (THE JOURNAL, July 3, 1954, page 913). The McIlvain Laboratories consist of five rooms on the fourth floor of the medical sciences building.

KENTUCKY

Personal.—Dr. James M. Kinsman, dean of the University of Louisville School of Medicine, has been appointed a member of the subspecialty board on cardiovascular diseases of the American Board of Internal Medicine. On Dec. 14, 1954, Dr. Kinsman was elected a director of the Louisville Chamber of Commerce, the first physician on the board in its five years of existence.

Society News.—At the annual meeting of the Kentucky Pediatric Society in Louisville, April 21, Dr. Hattie E. Alexander, New York City, gave the afternoon address, "Recent Advances in Antibiotic Therapy in Pediatrics," and the after-dinner address, "Bacterial Meningitis." The following officers were elected: president, Dr. Alexander J. Steigman, Louisville; vice-president, Dr. Daniel B. McIlvoy, Bowling Green; and secretary-treasurer, Dr. Selby V. Love, Louisville.

Tuberculosis Isolation Center.—Arrangements have been made for the Julius Marks Sanatorium in Lexington to be the isolation center for "recalcitrant" tuberculosis patients if suitable local facilities are not available. Under provisions of a law passed by the 1954 Kentucky general assembly, a patient with communicable tuberculosis who is not following proper isolation procedures and is endangering the welfare of his family and community may be convicted of a crime, punishable by a fine, not exceeding $500, or a jail term of from 30 days to 6 months, or both; or, if local facilities for his confinement are not available, the patient may be sent to the Julius Marks Sanatorium. The patient when delivered to the hospital must accept such isolation on a voluntary basis as an alternative to confinement in jail.

LOUISIANA

Exhibit on Medical History.—An exhibit, showing more than 100 years of medicine in New Orleans, on display at the Matas Medical Library of Tulane University of Louisiana School of Medicine, New Orleans, commemorates the 100th anniversary of the Louisiana State Board of Health. Special material is shown on Dr. Isidore Labatut, the first Louisiana-born physician to practice in the state.

University News.—The following appointments were recently made to the staff of the Louisiana State University School of Medicine, New Orleans: Richard E. Reeves, Ph.D., to research associate in biochemistry with the rank of assistant professor; Dr. Frederick H. Davis, formerly of McGill University, Toronto, Canada, to assistant professor of psychiatry and neurology; and Dr. Gerald S. Berenson, formerly of the University of Chicago School of Medicine, to assistant professor of medicine. Dr. William T. Newsom, formerly of the University of Oklahoma School of Medicine, Oklahoma City, was appointed clinical assistant professor of pediatrics and head of the premature infant station, Charity Hospital of Louisiana.

MAINE

Courses in Ophthalmology.—The Ophthalmological Study Council, Lancaster Courses in Ophthalmology, will be held at Colby College, Waterville, from June 25 to Sept. 11. The fee for the course is $325. For information write Ophthalmological Study Council, Dr. Parker Heath, Sullivan.

MARYLAND

Alumni Dinner.—During the Annual Meeting of the American Medical Association, the Medical Alumni Association, University of Maryland, Baltimore, has arranged a dinner for June 9, at the Chalfonte-Haddon Hall, Atlantic City, N. J.

Dr. Dana Goes to Boston.—Dr. George W. Dana, associate dean of the Johns Hopkins University School of Medicine and director of the medical care clinic of the Johns Hopkins Hospital, Baltimore, has been appointed medical director of the Bingham Associates Program. Based on the New England Center Hospital, a unit of Tufts-New England Medical Center in Boston, the Bingham Program affiliates with 48 hospitals in Maine and Massachusetts.

Institute of Acarology.—The University of Maryland, College Park, will present its Institute of Acarology for the summer session from June 27 to July 16 for entomologists, parasitologists, and zoologists. In line with the recent important discoveries of the role of the Acarina in the fields of public health and agriculture, the program has been expanded by increasing the facilities and the staff and by the participation of investigators from nearby institutions. For information write G. Anastos, Department of Zoology, University of Maryland, College Park.

MASSACHUSETTS

Personal.—At the annual meeting of the American Goiter Association in Oklahoma City, April 30, a certificate of meritorious service was presented to Dr. James H. Means, Jackson Professor Emeritus of Clinical Medicine, Harvard Medical School, Boston.——Dr. Theodore H. Ingalls, associate professor of epidemiology at the Harvard School of Public Health, Boston, was awarded the honorary degree of doctor of science at the 145th commencement of his alma mater, Hamilton College, Clinton, N. Y., on June 5.

Dr. Meigs Relinquishes Two Posts.—Dr. Joe Vincent Meigs has announced his resignation as chief of staff of the Vincent Memorial Hospital and chief of the gynecologic service of the Massachusetts General Hospital, Boston, effective July 1, in order to devote more time to private practice and to his responsibilities as clinical professor of gynecology at Harvard Medical School and as gynecologist at the Palmer Memorial Hospital, Boston, and the Pondville Hospital, Walpole. Dr. Meigs has been appointed, effective on his resignation, consulting visiting gynecologist at the Vincent Memorial Hospital and consulting visiting surgeon at the Massachusetts General Hospital.

Death of James Francis Ballard.—James F. Ballard, director of the Boston Medical Library since 1927, died in Milton, May 15, at the age of 77, after almost 63 years of service. Mr. Ballard had served as president of the Medical Library Association, chairman of its executive board, and editor of the official publication. He was consulting librarian to the Boston City Hospital, the Boston University School of Medicine, Tufts College Medical School in Boston, and the Armed Forces Medical Library in Washington. In 1920 he visited Europe in the interest of the China board of the Rockefeller Foundation to purchase a medical library for the Peiping Union Medical College. Subsequently, he made library surveys for various cities in the United States and between 1925 and 1928 assembled a medical library for the Rochester (N. Y.) University Medical School. In 1930 Mr. Ballard was instrumental in building up a collection of books and manuscripts, dating from 1200 to 1952, on scientific Hebraica-Judaica. For a number of years he was book review editor for the *New England Journal of Medicine*. At the time of his death, Mr. Ballard was working on a second volume of "A Catalog of the Medieval and Renaissance Manuscripts and Incunabula in the Boston Medical Library," first published in 1929.

MICHIGAN

Narcotic Violation.—Dr. Robert Gerald Jordan, 12791 E. Outer Drive, Detroit, pleaded guilty to a violation of the Federal Narcotic Law in the U. S. District Court at Detroit. On March 16 the imposition of sentence was suspended, and he was placed on probation for two years. He was also fined $2,000.

Blodgett Alumni Reunion.—An alumni reunion session will be held at Blodgett Memorial Hospital, Grand Rapids, June 10-11, for all former externs, interns, and residents. Operative clinics, pediatric and medical ward rounds, and a conference on obstetrics, will be presented simultaneously, 8:30-10 a. m. Friday.

Symposium on Reproduction and Infertility.—This symposium, sponsored by the Michigan State College School of Veterinary Medicine and the Michigan Agricultural Experiment Station, will be held at the Kellogg Center for Continuing Education, June 27-29, on the Michigan State College campus in East Lansing. Monday will be devoted to problems of diagnosis of reproductive diseases and a survey of progress in the specific disease areas of vibriosis, leptospirosis, trichomoniasis, and brucellosis. On Tuesday five lectures will be presented on the physiology and anatomy of male and female reproductive processes, and in the evening a panel discussion will be held on ova transplantation. Wednesday morning, papers on the endocrine control of reproduction in the male will be presented. This is one of 10 academic symposiums to be held on the Michigan State College campus in observance of the centennial. Arrangements have been made for lodging and meals for out-of-town guests at the Kellogg Center for Continuing Education. Programs can be obtained by writing to Ezra P. Reineke, Ph.D., Department of Physiology and Pharmacology, Michigan State College, East Lansing.

MISSISSIPPI

Hospital News.—Dr. James R. Cavett, president of the Mississippi-Baptist Hospital staff, Jackson, recently announced that physicians on the staff have contributed more than $125,000 during the past three years toward the $500,000 construction fund at the hospital, which is a nonprofit organization.

Dr. Boswell Honored.—On his 33rd anniversary as superintendent of the Mississippi State Sanatorium, Dr. Henry Boswell was guest of honor at a celebration in connection with homecoming day. Speakers included the Hon. Walter Sillers, speaker of the House of Representatives; Dr. Cyrus M. Shipp of Bay St. Louis; Dr. Ray H. Biggs, assistant superintendent of the sanatorium; and Major Frederick Sullens and Dr. Felix J. Underwood of Jackson. Lieut. Gov. Sam Lumpkin, representing the friends of Dr. and Mrs. Boswell, presented a silver pitcher and six matching goblets to Mrs. Boswell and a Cadillac car to Dr. Boswell, and announced that a $1,000 fund for needy patients had been established in Dr. Boswell's name.

MONTANA

Dr. Wernham Retires.—Dr. James I. Wernham has retired at the age of 80 after 41 years of practice in Billings, preceded by 10 years of practice at Marengo, Ill. Dr. Wernham was president of the Montana Medical Society in 1941 and served four terms as president of the Yellowstone Valley Medical Society. A past-president of the staffs of St. Vincent's and Billings Deaconess hospitals, he has served Billings as city health officer (1922-1926 and 1946-1953), as alderman, and as a member of the city airport commission. He was a vice-president and member of the board of directors of the Billings Chamber of Commerce and served on the board of the Yellowstone chapter of the American Red Cross and the Community Concert Association. Dr. Wernham, a captain in World War I, held the reserve rank of major in the Army Medical Corps until World War II. He has served also with the Veterans Administration.

Society News.—At a recent meeting of the Mount Powell Medical Society, Dr. Thomas J. Kargacin, Anaconda, was named president; Dr. Don R. Reed, Anaconda, was elected vice-president; and Dr. Scott L. Walker, Butte, was reelected secretary-treasurer.——At the regular January meeting of the Hill County Medical Society, Dr. Albert W. Axley, Havre, was elected

president; Dr. Myron E. Veseth, Havre, vice-president; and Dr. Ernest M. Lovell, Havre, secretary-treasurer.——Dr. Francis I. Sabo, Bozeman, was recently named president of the Gallatin County Medical Society; Dr. William H. Sippel, Bozeman, was elected vice-president; Dr. Paul H. Visscher, Bozeman, secretary; and Dr. Delmar D. Parke, Bozeman, treasurer.——At a recent meeting the Lewis and Clark Medical Society elected Dr. Raymond O. Lewis, Helena, president; Dr. Frank P. Nash, Townsend, vice-president; and Dr. Victoria C. Markellis, Helena, secretary-treasurer.

NEW YORK

Fellowships in Geriatrics.—The Ann Lee Home, Watervliet, offers two student fellowships in geriatrics this summer, which will include the opportunity to obtain practical experience in the care and management of geriatric patients. Room and board will be available. Adjacent facilities offer recreation opportunities. Application may be sent to Dr. John J. Phelan, Medical Director, Ann Lee Home, Watervliet.

New Basic Sciences Building.—President Dwight D. Eisenhower and Governor Thomas E. Dewey participated in a ceremony at the unveiling of the 800 room, $14,500,000 Basic Sciences Building of the State University of New York College of Medicine, New York City, Oct. 21, 1954, both delivering short addresses. Also participating were Carlyle Jacobsen, Ph.D., executive dean for medical education of the state university, who presided; Dr. Howard W. Potter, acting dean of the college; Mr. Charles Garside, chairman of the executive committee of the board of trustees; and Mr. Frank C. Moore, presiding officer of the board of trustees. The first permanent structure on the site of the state university's projected new Downstate Medical Center, the Basic Sciences Building is expected to be ready for occupancy in early 1956. At that time all the basic science departments of the college of medicine, now located in several buildings on Henry Street in Brooklyn Heights, will be consolidated. The student body, presently numbering 600, will be expanded to admit 200 new students each year, until a total student body of 800 is reached.

New York City

Dr. Edgar B. Burchell Dinner.—A subscription dinner honoring Edgar B. Burchell, D.Sc., on completion of 60 years of distinguished service at the New York Eye and Ear Infirmary, will be given June 10 at the 7th Regiment Mess, 643 Park Ave. at 67th St. Cocktails and reception at 6:30 p. m. will precede the dinner. For information write Dr. Joseph H. Krug, Secretary-Treasurer, Alumni Association, New York Eye and Ear Infirmary, 218 Second Ave.

Educators Honor Dr. Wertham.—Dr. Frederic Wertham has been given the 1954 annual award of the National Education Association for his book "Seduction of the Innocent" (Rinehart & Co., Inc.), a psychiatric study of the influence of mass communications mediums on children. The citation reads in part: "This book if read by the great body of American citizens, would help to build the understanding essential to the growth and survival of our free democratic society. . . . This volume should be in the library of every parent, teacher, preacher, and juvenile judge, and in school and public libraries. Let local education associations and PTA's see that it is widely read and that the community takes steps to protect all children from the menace it describes."

Fund-Raising Drive for Crippled.—The Institute for the Crippled and Disabled launched its 1955, $500,000 fund-raising campaign with the designation of Ed Furgol, champion golfer, as honorary chairman. Mr. Furgol, himself seriously handicapped, received the institute's "Handicapped Oscar" for his outstanding contribution to the advancement of public acceptance and understanding of the disabled and their problems. The "Handicapped Oscar," made by institute patients receiving vocational training, is a golden statue symbolizing the victory of the handicapped over their disabilities. It was presented by 4½-year-old Billy Bruckner, a victim of a congenital handicap that affected both of his arms. According to Mr. Bruce Barton, president of the institute, the funds are needed to maintain the rehabilitation center's programs for patients with cerebral palsy, poliomyelitis, tuberculosis, heart disease, and congenital disability, as well as for the care of those who are victims of accidents. The institute provides medical, vocational, and psychosocial services to the most seriously handicapped.

Dr. Whipple Awarded Academy Medal.—On Jan. 6, the New York Academy of Medicine bestowed on Dr. Allen O. Whipple its Academy medal, which has been awarded only eight times since its endowment by the late Dr. Samuel McCullough in 1928. The accompanying citation read, in part: "The recipient, one of the most eminent surgeons and surgical teachers of our time, has made many outstanding contributions to surgery—both from the investigative and the clinical points of view. He has done pioneer work of the highest order on surgery of the gall bladder and bile ducts, the pancreas, the spleen, and the portal circulation. Through his inspiration and training, others have gone on to the successful completion of many projects which he initiated. These achievements, with his qualities of integrity, his thoughtfulness of others, his kindliness, and his interest in helping the younger surgeons—describe to all of us tonight but one man—Dr. Allen O. Whipple . . ." who was Valentine Mott Professor of Surgery at the Columbia University College of Physicians and Surgeons for 25 years and director of surgery at Presbyterian Hospital for the same period of time until his retirement in 1946.

NORTH CAROLINA

University News.—In keeping with the 25 year tradition of Duke University School of Medicine, Durham, four of its students were recently elected to take part of their training in England this spring; two will attend ward rounds, clinics, and lectures at the Radcliffe Infirmary, Oxford University, and two will take similar work at St. Bartholomew's Hospital, London. According to Dean Wilburt C. Davison, over the years almost 10% of the more than 1,500 Duke students have taken some part of their medical training at another school, either in this country or abroad.

Personal.—Edward A. Eckert, Ph.D., instructor in bacteriology, Duke University School of Medicine, Durham, has been appointed assistant professor of microbiology at the State University of New York College of Medicine at New York City, Brooklyn, effective July 1.——Dr. J. Lamar Callaway, Duke University School of Medicine, Durham, has been appointed chief consultant on dermatological problems at U. S. Air Force bases in this country and abroad. Dr. Callaway is currently secretary of the American Dermatological Association and a member of the American Board of Dermatology and Syphilology.

Council on Gerontology.—Duke University, Durham, has established the first university-wide council on gerontology in the South. Comprising authorities from 15 departments within the university, the council will conduct seminars, guest lectures, conferences, institutes, and research aimed at helping older people to lead "satisfying, useful and economically-independent lives and to maintain better health." Dr. Ewald W. Busse, chairman, psychiatry department, is chairman of the council. The council initiated its program with a public lecture at the University, May 19, by Wilma T. Donahue, Ph.D., of the University of Michigan, Ann Arbor.

OHIO

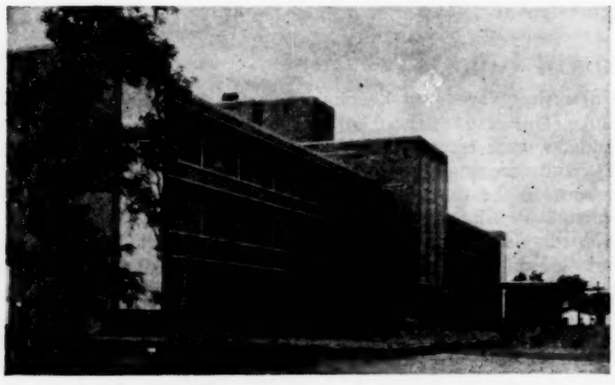
Russell Haden Memorial Fund.—Friends of the late Dr. Russell L. Haden have joined in establishing the Haden Memorial Fund. The first aim is to commission a portrait of Dr. Haden, who died in April, 1952. The balance of the contributions will be allocated to postgraduate medical education. The committee plans to unveil and dedicate the portrait next September. Dr. Haden, who was the chief of the medical division of the Cleveland Clinic from 1930 to his retirement in 1949, previously served as professor of experimental medicine at the University of Kansas School of Medicine, Lawrence and Kansas City.

PENNSYLVANIA

Personal.—Dr. Clair G. Spangler, Reading, recently retired as secretary of Berks County Medical Society after serving for 18 years. He was honored by the society at the annual banquet, where tributes were paid and a gift was presented to him.

More Physicians for Rural Areas.—More physicians for more rural areas is the objective of a program jointly sponsored by the committee on rural health and physician placement of the Medical Society of the State of Pennsylvania and the Pennsylvania State University. More than 1,000 questionnaires have been mailed to rural practitioners in an endeavor to determine the personal, social, and economic problems and advantages of medical practice in rural areas. The questionnaires, which request data on length and location of practice, reasons for selecting a rural location, opportunities for scientific study, hospital services, and consultive assistance, also inquire into the life of the rural physician, his family, number of children, and the opportunities to take part in social, fraternal, religious, and community service organizations.

Lower Bucks County Hospital.—The new 150-bed, $3,500,000 Lower Bucks County Hospital, on Bath Road in Bristol Township, Bucks County, opened its doors Nov. 1, 1954. Dr. Malcolm T. MacEachern, Chicago; Mr. Walter P. Reuther, national president of the CIO and UAW; and Mr. Ross L. Leffler of the United States Steel Corporation spoke at the dedication ceremonies. The five-wing building is on a 20-acre tract, which allows for the eventual building of a nurses' home, maternity home, and physicians' office building. An additional 50 beds can be added with the construction of a fourth floor. The building of the hospital, the first nonprofit hospital in the Lower Bucks County area, was financed under the Hill-Burton Act.



Lower Bucks County Hospital in Bristol.

Philadelphia

Courses on Laryngology and Bronchoesophagology.—The department of laryngology and bronchoesophagology, Temple University Hospital and School of Medicine, will present the following postgraduate courses, arranged under the direction of Drs. Chevalier L. Jackson and Charles M. Norris: Postgraduate Course in Bronchoesophagology, June 13-24 and Oct. 17-18; Postgraduate Course in Laryngology and Laryngeal Surgery, Sept. 19-30. Tuition for each course is $250. Information and application forms may be obtained from Dr. Chevalier L. Jackson, 3401 N. Broad St. (40).

Dr. Babcock Honored.—Dr. W. Wayne Babcock, emeritus professor of surgery at Temple University School of Medicine, whose faculty he joined in 1903, was recently honored at the 48th annual banquet of the Babcock Surgical Society by 200 persons, including 3 original members of the society, which was founded in 1907 in his honor. Dr. Babcock last June received the American Medical Association's Distinguished Service medal. Remarks citing Dr. Babcock's outstanding contributions to medicine and humanity were made by President Robert L. Johnson, LL.D., of Temple University, Dean William N. Parkinson of the Temple University School of Medicine, and Dr. Isidor S. Ravdin, professor of surgery at the University of Pennsylvania School of Medicine. Guest speaker at the banquet was Lieut. Col. Gerald M. McDonnel, M. C., U. S. Army, who is now assigned to the Walter Reed Medical Center in Washington, D. C.

RHODE ISLAND

Personal.—Dr. Charles P. Bailey of Philadelphia was the guest speaker for the combined Medical and Surgical Departments Conference at the Rhode Island Hospital, Providence, May 21. The topic of his address was "Cardiac Surgery."

State Medical Election.—The Rhode Island Medical Society recently installed Dr. Frank B. Cutts, Providence, as president; Dr. John G. Walsh, Providence, vice-president; Dr. Charles L. Farrell, Pawtucket, president-elect; Dr. Thomas Perry Jr., Providence, secretary; and Dr. John A. Dillon, Providence, treasurer.

John Farrell Honored.—The New England Health Education Association recently installed as its president John E. Farrell, Sc.D., Rumford, executive secretary of both the Rhode Island Medical Society and the Providence Medical Association. Mr. Farrell, one-time graduate manager of athletics at Providence College, served as secretary of the health education association for two years, and he has been a member of its board of directors for five years. He is a past-president of the Medical Society Executives Conference of America.

TEXAS

Dr. Gill Appointed Dean.—Dr. Atticus J. Gill, professor of pathology and acting dean at the Southwestern Medical School of the University of Texas, Dallas, since October, has been made permanent dean.

University News.—During the Pan-American International Psychology Congress at the University of Mexico, Mexico City, recently, Dr. Augustine Palacios and Molly R. Harrower, Ph.D., reported on the general purposes and program of the psychological testing study of entering medical students at the University of Texas Medical Branch, Galveston, under the auspices of the Josiah Macy, Jr. Foundation of New York. Dr. Palacios also reported on psychological differences in health attitudes between the Latin American population and the Anglo-American population.

Posthumous Award to Dr. Brindley.—At the annual meeting of the Texas Society of Pathologists, Inc., Jan. 29 and 30 at the Baker Hotel, Dallas, the Caldwell (Scientific) award was given posthumously to Dr. Paul Brindley, former professor of pathology, University of Texas Medical Branch, Galveston. The award is given annually to honor a distinguished medical scientist of Texas whose contributions to medical science in the state warrant commendation. A scroll and gold medal were presented by Dr. Caldwell's widow, Dr. Janet A. Caldwell, to Mrs. Paul Brindley in the name of the doctor. Reminiscences of Dr. Caldwell were delivered by Dr. Stuart A. Wallace, professor and chairman of pathology, Baylor University College of Medicine, Houston; Dr. William E. Flood, Fort Worth; and Dr. Charles T. Ashworth, pathologist of Harris Hospital, Fort Worth. Eulogies of Dr. Brindley were given by Dr. William P. Devereux, Dallas, and Drs. Vernie A. Stembridge and John H. Childers, associate professors of pathology, University of Texas Medical Branch, Galveston.

VIRGINIA

Hospital News.—The 28th annual spring Congress in Ophthalmology and Otolaryngology of the Gill Memorial Eye, Ear, Nose and Throat Hospital, Roanoke, attracted a total attendance of 350 doctors and their wives from the United States and Canada. The next congress will be held April 2-7, 1956.

Dr. Tuder Honored.—Dr. Thomas J. Tuder, a non-Catholic physician who was instrumental in assuring continuation of a Catholic hospital in mountainous southwestern Virginia, has received the honorary doctor of science degree from Georgetown University, Washington, D. C. Dr. Tuder, who has practiced for 45 years in Norton, was honored for using his prestige to help the St. Mary's Hospital survive initial opposition six years ago.

GENERAL

Sessions on Ophthalmologic Research.—Under the presidency of Dr. William F. Hughes Jr., Chicago, the Association for Research in Ophthalmology will hold its annual meeting conjointly with the section in ophthalmology of the American Medical Association June 7-9 at the Dennis Hotel, Atlantic City, N. J.

CAA-Designated Medical Examiners.—The A. M. A. convention headquarters of the Civil Aviation Medical Association will be open June 6-9 at the Hotel Shelbourne, Atlantic City, N. J. Every physician interested in aviation and aviation medicine and all designated medical examiners are cordially invited to register and to meet for informal discussion of important national aviation problems. Appointments with doctors interested in aviation medicine in any category will be gladly arranged by Dr. G. S. Backenstoe, president.

Supply of Rhesus Monkeys.—To assist U. S. State Department officials in their efforts to assure continued and adequate importation of Macaca mulatta (rhesus monkeys) from India for medical and biological purposes, an immediate nationwide survey is necessary to determine the number required for one year beginning July 1, 1955. Survey forms, which must be returned at once in order to be considered, may be secured from National Institutes of Health, Room 1012, Building T-6, Bethesda 14, Md. (telephone: Oliver 6-4000, extension 2748, Miss Parent).

Society News.—The **American Chemical Society** announces removal of its New York City office to 2 Park Ave., Room 1802, New York 16 (telephone: ORegon 9-1646).——The medical advisory board of the **Myasthenia Gravis Foundation** will hold a luncheon meeting at the Claridge Hotel, Atlantic City, N. J., June 7.——Officers chosen at the last annual meeting of the **Central Association of Obstetricians and Gynecologists** include: Dr. Frank L. McPhail, Great Falls, Mont., president; Dr. Harold L. Gainey, Kansas City, Mo., president-elect; and Dr. Edwin J. DeCosta, Chicago, secretary-treasurer. The 1955 annual meeting will be held in Columbus, Ohio, Oct. 6-8 and the 1956 annual meeting in New Orleans Oct. 4-6.

Health Career Guidebook.—"Health Careers Guidebook," a description of 156 health service occupations, has been published by the National Health Council and the Equitable Life Assurance Society. The booklet, attractively designed with text and pictures, has been widely distributed to each of the nation's 29,000 secondary schools and junior colleges, representing an enrollment of 7,500,000 teen-age students, and to executive secretaries of state and metropolitan medical societies. As an aid to organizing statewide or community-wide cooperative vocational guidance programs, the council also published a companion piece, "Partners for Health," an extensive compendium of careers in health service. This abridged edition has been sent to local health councils and other related agencies. Limited copies of the two publications may be secured without charge from Health Careers, Post Office Box 1400, New York City 1.

Gordon Research Conferences.—The Gordon Research Conference on "Structure, Chemistry, and Physiology of Bones and Teeth" will be held Aug. 1-5 at Colby Junior College, New London, N. H., under the sponsorship of the American Association for the Advancement of Science. The Gordon Research Conference on "Vitamins and Metabolism" is scheduled for Aug. 15-18. These conferences were established to stimulate research in universities, research foundations, and industrial laboratories by an informal type of meeting, consisting of the scheduled lectures and free discussion groups. Meetings are held in the morning and in the evening, Monday through Friday, with the exception of Friday evening. The afternoons are available for recreation, reading, resting, or participation in discussion groups. Accommodations are available for a limited number of women to attend each conference, also for wives who wish to accompany their husbands. All such requests should be made at the time of the request for attendance. Children 12 years of age and older can be accommodated. Applicants must state the institution or company with which they are connected and the type of work in which they are most interested. Attendance at each conference is limited to 100. Requests for attendance at the conferences should be addressed to W. George Parks, Director, Department of Chemistry, University of Rhode Island, Kingston, R. I. From June 10 to Sept. 2 mail should be addressed to Colby Junior College, New London, N. H.

Survey of Pediatric Education in Latin America.—The Pan American Sanitary Bureau, regional office for the Americas of the World Health Organization, is planning to conduct a survey of pediatric education in Latin America, beginning in July, 1955, similar to those that have been carried out in the United States, Canada, Europe, Australia, and New Zealand. The Latin American survey, which will cover 21 countries and about 75 schools, will take place in the fall of 1955 under the general direction of Dr. Myron E. Wegman, chief of the division of education and training of the bureau. Dr. James G. Hughes, professor of pediatrics at the University of Tennessee College of Medicine, Memphis, will act as special consultant for this program and will visit a large number of the schools. Endorsement of the program has been given by the International Pediatric Association and the American Academy of Pediatrics, whose chairmen and secretaries will collaborate in the gathering of information.

Prevalence of Poliomyelitis.—According to the National Office of Vital Statistics, the following number of reported cases of poliomyelitis occurred in the United States, its territories, and possessions from Jan. 1 to May 14, 1955:

New England States	
Maine	3
New Hampshire	3
Vermont	11
Massachusetts	11
Rhode Island	2
Connecticut	6
Middle Atlantic States	
New York	121
New Jersey	26
Pennsylvania	40
East North Central States	
Ohio	43
Indiana	21
Illinois	53
Michigan	59
Wisconsin	18
West North Central States	
Minnesota	23
Iowa	29
Missouri	18
North Dakota	4
South Dakota	13
Nebraska	22
Kansas	26
South Atlantic States	
Delaware	7
Maryland	8
District of Columbia	..
Virginia	14
West Virginia	16
North Carolina	37
South Carolina	16
South Atlantic States—Continued	
Georgia	42
Florida	165
East South Central States	
Kentucky	36
Tennessee	15
Alabama	12
Mississippi	31
West South Central States	
Arkansas	20
Louisiana	60
Oklahoma	22
Texas	207
Mountain States	
Montana	12
Idaho	33
Wyoming	9
Colorado	20
New Mexico	7
Arizona	16
Utah	24
Nevada	15
Pacific States	
Washington	31
Oregon	39
California	331
Territories and Possessions	
Alaska	7
Hawaii	12
Puerto Rico	355
Total	2,171

FOREIGN

Meeting on Endocrinology.—The third Congress of French-Speaking Endocrinologists will be held June 18-20 at Brussels, Belgium. Topics for discussion are "Hormonal Balance in Pregnancy" (Saturday); "Androgens in the Female Organism" (Sunday); and "Problems in Cortisone Therapy" (Monday). Information may be obtained from Prof. J. Lederer, Secretary to the Congress, 233, Avenue de Tervuren, Brussels.

Congress on Bronchology.—The fifth Congress of the International Association for Bronchology will convene June 18-19 at the Konserthuset, Hötorget, Stockholm, Sweden. On Saturday the subject for discussion will be "The Value of Endobronchial Techniques in the Investigation of the Functional Capacity of Each Lung Separately." Sunday morning the topic will be "Bronchial Secretion" and Sunday afternoon, "Clinic and Treatment of Bronchial Adenomas."

MEETINGS

AMERICAN MEDICAL ASSOCIATION: Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.

1955 Annual Meeting, Atlantic City, N. J., June 6-10.

1955 Clinical Meeting, Boston, Nov. 29-Dec. 2.

1956 Annual Meeting, Chicago, June 11-15.

1956 Clinical Meeting, Seattle, Nov. 27-30.

1957 Annual Meeting, New York, June 3-7.

AMERICAN ELECTROENCEPHALOGRAPHIC SOCIETY, Palmer House, Chicago, June 10-12. Dr. W. T. Liberson, EEG Research Laboratory, Veterans Administration Hospital, Northampton, Mass., Secretary.

AMERICAN HEARING SOCIETY, Hotel Morrison, Chicago, June 12-14. Mr. Crayton Walker, 817 Fourteenth St. N.W., Washington 5, D. C., Executive Director.

AMERICAN NEUROLOGICAL ASSOCIATION, Palmer House, Chicago, June 13-15. Dr. H. Houston Merritt, 710 West 168th St., New York 32, Secretary.

AMERICAN ORTHOPEDIC ASSOCIATION, Greenbrier Hotel, White Sulphur Springs, W. Va., June 19-22. Dr. George O. Eaton, 4 East Madison St., Baltimore 2, Secretary.

AMERICAN PEDIATRIC SOCIETY, Chateau Frontenac, Quebec, Canada, June 13-17. Dr. Aims C. McGuinness, Medical Laboratories, University of Pennsylvania, Philadelphia 4, Secretary.

ASSOCIATION FOR RESEARCH IN OPHTHALMOLOGY, Dennis Hotel, Atlantic City, N. J., June 7-9. Dr. Lorand V. Johnson, 10515 Carnegie Ave., Cleveland 6, Secretary.

IDAHO STATE MEDICAL ASSOCIATION, Sun Valley, June 19-22. Mr. Armand L. Bird, 364 Sonna Bldg., Boise, Executive Secretary.

MAINE MEDICAL ASSOCIATION, The Samoset, Rockland, June 19-21. Mrs. Esther M. Kennard, 142 High St., Portland 3, Secretary.

MEDICAL SURGICAL CONFERENCE, Great Falls, Mont., June 20-21. Dr. Carl Nelson, 600 Central Ave., Great Falls, Mont., Secretary.

POST GRADUATE MEDICAL ASSEMBLY OF SOUTH TEXAS, The Shamrock, Houston, July 18-20. Dr. C. Forrest Jorns, 412 Jesse H. Jones Library Bldg., Houston, Secretary.

ROCKY MOUNTAIN CANCER CONFERENCE, Shirley-Savoy Hotel, Denver, July 13-14. Dr. Frederick H. Brandenburg, 835 Republic Bldg., Denver 2, Chairman.

SOCIETY OF BIOLOGICAL PSYCHIATRY, Palmer House, Chicago, June 11-12. Dr. George N. Thompson, 2010 Wilshire Blvd., Los Angeles 5, Secretary.

SOCIETY FOR PEDIATRIC RESEARCH, Chateau Frontenac, Quebec, Canada, June 15-18. Dr. Sydney S. Gellis, 330 Brookline Ave., Boston 15, Secretary.

SOCIETY FOR VASCULAR SURGERY, Atlantic City, N. J., June 5. Dr. George D. Lilly, 333 Ingraham Bldg., Miami 32, Fla., Secretary.

SYMPOSIUM FOR GENERAL PRACTITIONERS ON TUBERCULOSIS AND OTHER CHRONIC PULMONARY DISEASES, Saranac Lake, N. Y., July 11-15. Dr. Richard P. Bellaire, P. O. Box 2, Saranac Lake, N. Y., General Chairman.

THE SOCIETY OF NUCLEAR MEDICINE, Multnomah Hotel, Portland, Ore., June 17-19. Dr. Arthur H. Livermore, Reed College, Portland 2, Ore., Secretary.

UPPER PENINSULA MEDICAL SOCIETY, Gateway Hotel, Land O'Lakes, Wis., June 17-18. Dr. William H. Wacek, Box 680, Ironwood, Mich., Secretary.

WOMAN'S AUXILIARY TO THE AMERICAN MEDICAL ASSOCIATION, Haddon Hall, Atlantic City, N. J., June 6-10. Miss Margaret Wolfe, 535 N. Dearborn St., Chicago 10, Executive Secretary.

WYOMING STATE MEDICAL SOCIETY, Hotel Connor, Laramie, June 12-15. Mr. Arthur R. Abbey, Box 2036, Cheyenne, Executive Secretary.

FOREIGN AND INTERNATIONAL

AUSTRALASIAN MEDICAL CONGRESS, Sydney, N.S.W., Australia, Aug. 20-27. For information write: Federal Council of the B.M.A. in Australia, 135 Macquaire St., Syndey, N.S.W., Australia.

CANADIAN AND BRITISH MEDICAL ASSOCIATIONS, Joint Meeting, Toronto, Canada, June 20-22. Dr. Arthur D. Kelly, 244 St. George St., Toronto, Canada, General Secretary.

COMMONWEALTH HEALTH AND TUBERCULOSIS CONFERENCE, Royal Festival Hall, London, England, June 21-25. Mr. J. H. Harley Williams, Tavistock House North, Tavistock Square, London, W.C.1, England, Secretary General.

CONGRESS OF INTERNATIONAL ASSOCIATION OF APPLIED PSYCHOLOGY, London, England, July 18-23. Dr. C. B. Frisby, National Institute of Industrial Psychology, 14 Welbeck St., London, W.1, England, President.

CONGRESS OF INTERNATIONAL ASSOCIATION OF PSYCHOTECHNOLOGY, London, England, July 18-23. For information write: Dr. C. B. Frisby, Director, National Institute of Industrial Psychology, 14 Welbeck St., London, W.1, England.

CONGRESS OF THE INTERNATIONAL ASSOCIATION FOR THE STUDY OF THE BRONCHI, Stockholm, Sweden, June 18-19. For information write: Dr. J. M. Lemoine, 187 boulevard St. Germain, Paris 7e, France.

CONGRESS OF INTERNATIONAL DIABETES FEDERATION, Cambridge, England, July 4-8. Mr. James G. L. Jackson, 152 Harley St., London, W.1, England, Executive Secretary General.

CONGRESS OF INTERNATIONAL SOCIETY OF SURGERY, Copenhagen, Denmark, July 23-29. Dr. L. Dejardin, 141 rue Belliard, Brussels, Belgium, General Secretary.

EUROPEAN CONGRESS ON RHEUMATISM, Scheveningen, The Hague, Netherlands, June 13-17. Dr. H. van Swaay, Pieter Bothstraat 12, The Hague, Netherlands, Secretary.

INTERNATIONAL ACADEMY OF LEGAL AND SOCIAL MEDICINE, Plenary Conference, Genes, Italy, Oct. 13-17. Prof. Domenico Macaggi, Institut de Medicine legale, Universite de Genes, Genes, Italy, President.

INTERNATIONAL ANATOMICAL CONGRESS, Paris, France, July 25-30. Prof. Gaston Cordier, 45, rue des Saints-Pères, Paris 6e, France, Secretary General.

INTERNATIONAL CONGRESS OF ALLERGOLOGY, Rio de Janeiro, Brazil, S. A., Nov. 6-13. Dr. Bernard N. Halpern, 197 boulevard St. Germain, Paris 7e, France, Secretary General.

INTERNATIONAL CONGRESS OF ANGIOLOGY AND HISTOPATHOLOGY, Fribourg, Switzerland, Sept. 2-5. For information write: Dr. Gerson, 4 rue Pasquier, Paris 8e, France.

INTERNATIONAL CONGRESS OF BIOCHEMISTRY, Brussels, Belgium, Aug. 1-6. Prof. C. Liebecq, 17 Place Delcour, Liège, Belgium, Secretary General.

INTERNATIONAL CONGRESS OF CRIMINOLOGY, London, England, Sept. 11-18. For information write: Dr. Carroll, 28 Weymouth St., London, W.1, England.

INTERNATIONAL CONGRESS OF EUROPEAN SOCIETY OF HAEMATOLOGY, Freiburg i,Br., Germany, Sept. 20-24. Prof. Dr. L. Heilmeyer, Hugstetter Strasse 55, Freiburg i,Br., Germany, Chairman.

INTERNATIONAL CONGRESS OF LIBRARIANSHIP AND DOCUMENTATION, Brussels, Belgium, Sept. 11-18. For information write: Dr. A. C. Breycha-Vauthier, Librarian, United Nations, Geneva, Switzerland.

INTERNATIONAL CONGRESS OF MEDICAL PROFESSIONAL JURISDICTION, MEDICAL ETHICS, AND COMPARATIVE MEDICAL LAW, Paris, France, Sept. 30-Oct. 3. Dr. J. R. DeBray, Conseil National de L'Ordre des Medécins, 60, Boulevard Latour-Maubourg, Paris 7e, France, Secretary General.

INTERNATIONAL CONGRESS OF MILITARY MEDICINE AND PHARMACY, Istanbul, Turkey, Aug. 28-Sept. 1. Dr. J. Voncken, International Committee of Military Medicine and Pharmacy, 79 rue Saint Laurent, Leige, Belgium, Secretary-General.

INTERNATIONAL CONGRESS OF NEUROPATHOLOGY, London, England, Sept. 12-17. Dr. W. H. McMenemey, Maida Vale Hospital for Nervous Diseases, London, W.9, England, Secretary.

INTERNATIONAL CONGRESS OF PLASTIC SURGERY, Stockholm, Sweden, Aug. 1-4, and Uppsala, Sweden, Aug. 5. Dr. Tord Skoog, Uppsala, Sweden, General Secretary.

INTERNATIONAL CONGRESS ON URINARY LITHIASIS, Evian, France, Sept. 2-4. Mr. Rossollin-Grandville, Direction Cachet, Evian (Hte-Savoie), France, Secretary General.

INTERNATIONAL GENERAL MEDICAL CONGRESS, University of Rosario Medical College, Rosario, Argentina, S. A., Nov. 7-12. Dean Jose Imhoff, Santa Fé 3100, Rosario, Argentina, S. A., Chairman.

INTERNATIONAL MEDICAL CONGRESS, Verona, Italy, Sept. 1-4. For information write: c/o Offices of the International Verona Fair, Piazza Bra., Verona, Italy.

INTERNATIONAL OFFICE OF DOCUMENTATION OF MILITARY MEDICINE, Istanbul, Turkey, Aug. 28-Sept. 1. Dr. J. Voncken, 79 rue Saint Laurent, Liege, Belgium, Secretary-General.

INTERNATIONAL SOCIETY FOR THE STUDY OF BIOLOGICAL RHYTHMS, Stockholm, Sweden, Sept. 15-17. For information write: Prof. Ture Petrén, Karolinska Institutet, Stockholm 60, Sweden.

INTERNATIONAL SYNDICATE OF GYNECOLOGISTS AND OBSTETRICIANS, Meeting Hall of Medical Societies, Paris, France, June 27-28. Dr. Jacques Courtois, 1, rue Racine, Saint-Germain-en-Laye (S & O), France, Secretary General.

INTERNATIONAL VITAMIN E CONGRESS, Cini Foundation, Island of San Giorgio Maggiore, Venice, Italy, Sept. 5-8. Prof. Emilio Raverdino, via Pietro Verri 4, Milano, Italy, Secretary.

IRISH MEDICAL ASSOCIATION, Trinity College, Dublin, Ireland, July 4-8. Dr. P. J. Delaney, 10 Fitzwilliam Place, Dublin, Ireland, Secretary.

NEURORADIOLOGIC SYMPOSIUM, London, England, Sept. 13-17. Dr. R. D. Hoare, National Hospital, Queen Square, London, W.C.1, England, Secretary.

PAN AMERICAN CONGRESS OF OPHTHALMOLOGY, Santiago, Chile, S. A., Jan. 9-14, 1956. Dr. Rene Contardo, Huerfanos 930, Of. 74, Santiago, Chile, Secretary General.

PAN AMERICAN CONGRESS ON RHEUMATIC DISEASES, Rio de Janeiro and Sao Paulo, Brazil, S. A., Aug. 14-20. For information write: Dr. Waldemar Bianchi, 126 Avenida Franklin D. Roosevelt, Rio de Janeiro, Brazil, S. A.

VENEZUELAN CONGRESS OF MEDICAL SCIENCES, Caracas, Venezuela, S. A., Nov. 18-26. Dr. A. L. Briceno Rossi, Apartado 4412, Ofic. del Este, Caracas, Venezuela, S. A., Secretary General.

WORLD CONGRESS OF ANESTHESIOLOGISTS, Scheveningen, Netherlands, Sept. 5-10. For information write: Mr. W. A. Fentener van Vlissingen, Noord-Houdringelaan, 24, Bilthoven, Netherlands.

WORLD CONGRESS ON FERTILITY AND STERILITY, Naples, Italy, May 18-26, 1956. For information address: Prof. G. Tesauro, S. Andrea della Dame, 19, Naples, Italy.

WORLD CONGRESS OF JEWISH PHYSICIANS, Haifa, Tel-Aviv, Jerusalem, Israel, Aug. 10-17. Dr. Z. Avigdori, P.O.B. 1342, Jerusalem, Israel, Chairman.

WORLD FEDERATION FOR MENTAL HEALTH, Istanbul, Turkey, Aug. 21. For information write: Miss E. M. Thornton, 19 Manchester St., London, W.1, England.

WORLD MEDICAL ASSOCIATION, Vienna, Austria, Sept. 20-26. Dr. Louis H. Bauer, 345 East 46th St., New York 17, N. Y., U. S. A., Secretary General.

EXAMINATIONS AND LICENSURE

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 21-23. Sec., Dr. D. G. Gill, 537 Dexter Ave., Montgomery 4.

ARIZONA:* *Examination.* Phoenix, July 13-15. *Reciprocity.* Phoenix, July 16. Sec., Dr. M. R. Richter, 2910 N. 7th Ave., Phoenix.

ARKANSAS:* *Examination.* Little Rock, June 9-10. Sec., Dr. Joe Verser, Harrisburg.

CALIFORNIA: *Written.* San Francisco, June 20-23; Los Angeles, Aug. 22-25; and Sacramento, Oct. 17-20. *Oral and Clinical Examinations for Foreign Medical School Graduates.* San Francisco, June 19; Los Angeles, Aug. 21; and San Francisco, Nov. 13. *Oral Examination for Reciprocity Applications.* San Francisco, June 18; Los Angeles, Aug. 20; and San Francisco, Nov. 12. Sec., Dr. Louis E. Jones, Room 536, 1020 N Street, Sacramento.

COLORADO:* *Examination.* Denver, June 14-15. Final date for filing applications was May 13. *Reciprocity.* Denver, July 12. Final date for filing application is June 13. Exec. Sec., Miss Beulah H. Hudgens, 831 Republic Bldg., Denver 2.

CONNECTICUT:* *Regular.* Hartford, July 12-14. Sec., Dr. Creighton Barker, 160 St. Ronan St., New Haven. *Homeopathic.* Derby, July 12-13. Sec., Dr. Donald A. Davis, 38 Elizabeth St., Derby.

DELAWARE: *Examination.* Dover, July 12-14. *Endorsement.* Dover, July 21. Final date for filing applications is June 15. Sec., Dr. Joseph S. McDaniel, Dover.

FLORIDA:* *Examination.* Jacksonville, June 26-28. Sec., Dr. Homer L. Pearson, 901 N.W. 17th St., Miami.

GEORGIA: *Examination.* Atlanta and Augusta, June 7-8. *Reciprocity.* June 9. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDAHO: *Examination and Reciprocity.* Boise, July 11-13. Ex. Sec., Mr. Armand L. Bird, 364 Sonna Bldg., Boise.

ILLINOIS: *Examination and Reciprocity.* Chicago, June 21-23. Supt. of Registration, Mr. Fredric B. Selcke, State House, Springfield.

INDIANA: *Examination.* Indianapolis, June 21-23. Exec. Sec., Miss Ruth V. Kirk, 538 K. of P. Building, Indianapolis.

IOWA:* *Examination.* Iowa City, June 13-15. Exec. Sec., Mr. Ronald V. Saf, State Office Bldg., Des Moines.

KANSAS: *Examination and Endorsement.* Kansas City, June 8-9. Sec., Dr. O. M. Davidson, 872 New Brotherhood Bldg., Kansas City.

KENTUCKY: *Examination.* Louisville, June 6-8. Asst. Sec., Mr. Raymond F. Dixon, 620 S. 3rd St., Louisville.

LOUISIANA: *Regular. Examination and Reciprocity.* New Orleans, June 2-4. Sec., Dr. Edwin H. Lawson, 930 Hibernia Bank Bldg., New Orleans. *Homeopathic. Examination and Reciprocity.* Subject to Call. Sec., Dr. F. H. Hardenstein, 903 Pere Marquette Bldg., New Orleans 12.

MAINE: *Examination and Reciprocity.* Augusta, July 12-13. Sec., Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Regular Examination.* Baltimore, June 21-24. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore 18. *Homeopathic Examination. Written.* Baltimore, June 20-22. Sec., Dr. Robert H. Reddick, Eastern Shore State Hospital, Cambridge.

MASSACHUSETTS: *Examination.* Boston, July 12-15. Sec., Dr. Robert C. Cochrane, Room 37, State House, Boston.

MICHIGAN:* *Examination.* Ann Arbor and Detroit, June 8-10. Sec., Dr. J. Earl McIntyre, 118 Stevens T. Mason Bldg., Lansing 8.

MINNESOTA:* *Examination.* Minneapolis, June 14-16. Sec., Dr. F. H. Magney, 230 Lowry Medical Arts Bldg., St. Paul 2.

MISSISSIPPI: *Examination and Reciprocity.* Jackson, June 27-29. Asst. Sec., Dr. R. N. Whitfield, State Board of Health, Jackson.

MISSOURI: *Examination.* St. Louis, June 1-2. *Reciprocity.* St. Louis, June 5. Sec., Mr. John A. Hailey, P. O. Box 4, Jefferson City.

MONTANA: *Examination and Reciprocity.* Helena, Oct. 4-5. Sec., Dr. Sidney A. Cooney, 7 West 6th Ave., Helena.

NEBRASKA:* *Examination.* Omaha, June. Director, Bureau of Examining Boards, Mr. Husted K. Watson, State Capitol Bldg., Room 1009, Lincoln 9.

NEVADA:* *Examination and Reciprocity.* Reno, July 5. Sec., Dr. G. H. Ross, 112 N. Curry St., Carson City.

NEW HAMPSHIRE: *Examination and Reciprocity.* Concord, Sept. 14. Sec., Dr. John S. Wheeler, 107 State House, Concord.

NEW MEXICO:* *Examination and Reciprocity.* Santa Fe, Nov. 21-22. Sec., Dr. R. C. Derbyshire, 227 E. Palace Ave., Santa Fe.

NEW YORK: *Examination.* Albany, Buffalo, Syracuse and New York City. Sec., Dr. Stiles D. Ezell, 23 S. Pearl St., Albany 7.

NORTH CAROLINA: *Examination.* Raleigh, June 20-23. *Reciprocity.* Pinehurst, May 2, Blowing Rock, July 29. Sec., Dr. Joseph J. Combs, 716 Professional Building, Raleigh.

NORTH DAKOTA: *Examination.* Grand Forks, July 6-8. *Reciprocity.* Grand Forks, July 9. Sec., Dr. C. J. Glaspel, Grafton.

OHIO: *Written.* Columbus, June 13-15. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus 15.

OKLAHOMA:* *Examination.* Oklahoma City, June 7-8. Sec., Dr. C. Gallagher, 813 Braniff Bldg., Oklahoma City.

OREGON:* *Examination and Reciprocity.* Portland, July 7-9. Exec. Sec., Mr. Howard I. Bobbitt, 609 Failing Bldg., Portland 4.

PENNSYLVANIA: *Examination.* Philadelphia and Pittsburgh, June 27-29. Acting Sec., Mrs. Marguerite G. Steiner, Box 911, Harrisburg.

RHODE ISLAND:* *Examination.* Providence, July 7-8. Administrator of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: *Examination.* Columbia, June 27-29. *Reciprocity.* Charleston, May 10. Sec., Mr. N. B. Heyward, 1329 Blanding St., Columbia.

SOUTH DAKOTA:* *Examination and Reciprocity.* Rapid City, July 19-20. Exec. Sec., Mr. John C. Foster, 300 First National Bank Bldg., Sioux Falls.

TENNESSEE: *Examination.* Nashville, June 8-9; Memphis, June 15-16. Sec., Dr. H. W. Qualls, 1635 Exchange Bldg., Memphis.

TEXAS:* *Examination and Reciprocity.* Fort Worth, June 20-22. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Fort Worth 2.

UTAH: *Reciprocity.* Salt Lake City, June 21. *Examination.* Salt Lake City, July 6-8. Director of Registration, Mr. Frank E. Lees, 324 State Capitol Bldg., Salt Lake City.

VERMONT: *Examination and Endorsement.* Burlington, June 15-17. Sec., Dr. F. J. Lawliss, Richford.

VIRGINIA: *Examination.* Richmond, June 16-18. *Reciprocity.* Richmond, June 15. Address: The Secretary, 631 First St., S.W., Roanoke.

WASHINGTON:* *Examination and Reciprocity.* Seattle, July 10-13. Sec., Mr. Edward C. Dohm, Capitol Bldg., Olympia.

WEST VIRGINIA: *Examination and Reciprocity.* Charleston, July 11-12. Sec., Dr. N. H. Dyer, State Office Bldg., No. 5, Charleston.

WISCONSIN:* *Examination and Endorsement.* Milwaukee, July 12-14. Sec., Dr. Thomas W. Tormey, 1140 State Office Bldg., Madison 2.

WYOMING: *Examination and Reciprocity.* Cheyenne, June 6. Sec., Dr. Franklin D. Yoder, State Office Bldg., Cheyenne.

ALASKA:* On application. Sec., Dr. W. M. Whitehead, 172 South Franklin St., Juneau.

GUAM: The Commission on Licensure will meet whenever a candidate appears or submits his credentials. Sec., Dr. John E. Kennedy, Agana.

HAWAII: *Examination.* Honolulu, July 11-14. Sec., Dr. I. L. Tilden, 1020 Kapiolani St., Honolulu.

VIRGIN ISLANDS: *Examination and Reciprocity.* St. Thomas, June 8-9. Sec., Dr. Earle M. Rice, St. Thomas.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA: *Examination.* Tucson, June 21. Sec., Mr. Herbert D. Rhodes, University of Arizona, Tucson.

COLORADO: *Examination.* Denver, Sept. 14-15. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver 18.

CONNECTICUT: *Examination.* New Haven, June 11. Address: State Board of Healing Arts, 258 Bradley St., New Haven 10.

IOWA: *Examination.* Des Moines, July 12. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

MICHIGAN: *Examination and Endorsement.* Detroit and Ann Arbor, Oct. 14-15. Sec., Mrs. Anne Baker, 410 W. Michigan Ave., Lansing 15.

MINNESOTA: *Examination.* Minneapolis, June 7-8. Sec., Dr. Raymond N. Bieter, 105 Millard Hall, University of Minnesota, Minneapolis.

NEVADA: *Examination.* Reno, July 5. Sec., Dr. Donald G. Cooney, Box 9005, University Station, Reno.

NEW MEXICO: *Examination.* Santa Fe, July 17. Sec., Mrs. Marguerite Cantrell, Box 1522, Santa Fe.

OKLAHOMA: *Examination.* Oklahoma City, August 26-27. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

OREGON: *Examination.* Portland, June 4, Sept. 10, and Dec. 3. Sec., Mr. Charles D. Byrne, State Board of Higher Education, Eugene.

SOUTH DAKOTA: *Examination.* Vermillion, June 10-11. Sec., Dr. Gregg M. Evans, 310 E. 15th St., Yankton.

TENNESSEE: *Examination.* Memphis, July 6-7. Sec., Dr. O. W. Hyman, 874 Union Ave., Memphis.

TEXAS: *Examination.* Various cities to be determined by number of applicants from the various areas, October. Sec., Brother Raphael Wilson, 407 Perry-Brooks Bldg., Austin.

WASHINGTON: *Examination.* Seattle, July 6-7. Sec., Mr. Edward C. Dohm, Capitol Bldg., Olympia.

WISCONSIN: *Examination.* Madison, Sept. 23; Milwaukee, Dec. 3. Sec., Mr. William H. Barger, 621 Ransom St., Ripon.

ALASKA: On application. Juneau or other towns in Territory as decided by Board. *Reciprocity.* On application. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

•Basic Science Certificate required.

MAGAZINE–TELEVISION REPORT

The following list of current medical articles in mass-circulation magazines and forthcoming network television programs on medical subjects is published each week only for the information of readers of THE JOURNAL. *Unless specifically stated, the American Medical Association neither approves nor disapproves of the articles and programs reported.*

TELEVISION

Monday, June 6

NBC-TV, 9 p. m. EDT. "Medic" begins summer reruns with "After the Darkness."

Tuesday, June 7

NBC-TV, 9:30 p. m. EDT. "March of Medicine," presented in cooperation with the American Medical Association, will report on the American Medical Association's meeting in Atlantic City.

CBS-TV, 10:30 p. m. EDT. "See It Now," Edward R. Murrow's documentary program, takes up the cigarette-cancer controversy.

MAGAZINES

Saturday Evening Post, May 28, 1955

"Trypsin—Mysterious New Drug," by Milton Silverman

How the crystalline enzyme is being used to reduce inflammation. Includes a discussion of controversies the drug has raised in the medical profession.

McCall's, June, 1955

"We Refused to Let Angela Die," by Mrs. Ivy McKnight

A British mother tells how her family and doctors united to bring a child born with elevated cerebral pressure back to health.

Ladies' Home Journal, June, 1955

"Nurses—a Major National Need," by Margaret Hickey

The advantages of a career in nursing are brought out in this story of a nurse at Huntington Memorial Hospital, Pasadena, Calif.

The American Magazine, June, 1955

"More and Better Doctors for Your Town," by Jerome Beatty

The "Kansas Health Plan" for getting doctors to practice in rural areas. The article tells of the first clinic built under this plan at Mankato, Kan., and describes the role played by Dr. Franklin D. Murphy.

The Reader's Digest, June, 1955

"Bringing the Antibiotics up to Date," by Paul de Kruif

The use of antibiotics today with an emphasis on the dangers of overdosing. The author concludes: "when our physicians use antibiotics not indiscriminately, but thoroughly, to prevent or cure our ills, then we find these big medicines are truly magical." Condensed from a May, 1955, *Today's Health* article.

Redbook, June, 1955

"Can Your Family Doctor Save You from Cancer," by William A. Lydgate

In a spot check of examinations given healthy young people who wanted to be sure they didn't have cancer, the author reports that many doctors have to be prodded into giving thorough checkups. "Some of the doctors failed to measure up to minimum standards set by the American Cancer Society; others were remarkably thorough. In general, the younger doctors did better—perhaps because their medical training is more modern, or perhaps because, being young, they have smaller practices and more time to spend on each patient."

"The Most Wonderful 'Wonder Drug,'" by Alton Blakeslee

Discussions of blood types, Rh factor, plasma, and gamma globulin.

The American Weekly, June 5, 1955

"A New Way to Save Babies," by William Engle

Vitamins, with emphasis on those found in citrus fruits, are being used to prevent miscarriages.

Parade, June 5, 1955

"Surgery's New Way to SLOW the Heart," by Robert P. Goldman

A team of Johns Hopkins doctors are experimenting with surgery that cuts the bundle of His to slow down the heartbeat.

DEATHS

Cantor, Aaron Samuel ✠ Scranton, Pa.; born in Szagaren, Lithuania, Dec. 24, 1885; University of Pennsylvania Department of Medicine, Philadelphia, 1907; interned at the Philadelphia General Hospital; served during World War I; later did postgraduate work in Austria, Germany, and England; specialist certified by the American Board of Internal Medicine; member of the American Geriatrics Society, American Academy of Science, New York Academy of Science, Pennsylvania Academy of Science, American College of Chest Physicians, American Association for the Advancement of Science, American Trudeau Society, American Heart Association, American Diabetes Association, and the World Medical Association, of which he was a founder-member of the United States Committee; fellow of the American College of Cardiology; director and past president of the Lackawanna County Heart Association; began practice of medicine in Philadelphia in 1908, moving to Dickson City in 1912, where he became commissioner of health; while in Philadelphia he was a founder, and chief in medicine at Northeastern Hospital from 1909 to 1911, and volunteer assistant in pathology at his alma mater; chief of cardiovascular diseases at Hahnemann Hospital since 1925; member of the staffs of the Mercy and St. Mary's hospitals; member of the board of trustees at Scranton State Hospital from 1932 to 1936; associated with the Mid-Valley Hospital in Peckville and the Wayne County Memorial Hospital in Honesdale; one of the founders of the Jewish Home for the Friendless, now the Jewish Home of Northeastern Pennsylvania, of which he was board chairman for 25 consecutive years, and since 1946 honorary board chairman; patron of the Smithsonian Institute in Washington, D. C.; died April 18, aged 69, of coronary occlusion.

Carpenter, Howard Childs ✠ Philadelphia; born in Philadelphia Dec. 16, 1878; University of Pennsylvania Department of Medicine, Philadelphia, 1900; formerly on the faculty of his alma mater; emeritus professor of pediatrics, and from 1926 to 1943 vice-dean at the University of Pennsylvania Graduate School of Medicine; specialist certified by the American Board of Pediatrics; on the medical advisory committee of the U. S. Children's Bureau and the pediatric advisory board of the American Child Health Association; a section member of the White House Conference on Child Health and Protection; member of the American Pediatric Society, serving as its secretary and treasurer from 1916 to 1931 and president, 1931-1932; past president of the Children's Hospital Association of America and of the Children's Bureau of Philadelphia; an associate member of the American Medical Association; for many years director of the department for the prevention of disease at the Children's Hospital of Philadelphia, where he was medical director from 1913 to 1939; consulting pediatrician at the Delaware County Hospital in Drexel Hill, Pa.; formerly pediatrician on the staff of the Graduate Hospital; consulting pediatrician at the Woman's Hospital; served as director of service for the department of pediatrics at Germantown Dispensary and Hospital; consultant to the Philadelphia Home for Incurables; died April 6, aged 77, of coronary thrombosis.

Ordway, William Herbert ✠ Longmeadow, Mass.; born in Chicopee, Mass., March 24, 1889; Yale University School of Medicine, New Haven, Conn., 1912; member of the American College of Chest Physicians, Medical Society of the State of New York, and the American Trudeau Society; fellow of the American College of Physicians; served in France during World War I; served as president of the Saratoga County (N. Y.) Medical Society and the Saratoga County Tuberculosis and Public Health Committee, of which he was director; at one time assistant medical director of the Metropolitan Life Insurance Company in New York; formerly associated with the Saratoga (N. Y.) Hospital and the Glens Falls (N. Y.) Hospital; died in the Springfield (Mass.) Hospital April 1, aged 66, of arteriosclerotic heart disease.

✠ Indicates Member of the American Medical Association.

Albertson, Harry Walter ✠ Dalton, Pa.; born in Red Rock, Aug. 2, 1875; Jefferson Medical College of Philadelphia, 1902; past president of the Medical Society of the State of Pennsylvania; in 1918 president of the Lackawanna County Medical Society; in 1927 appointed a member of the state board of medical education and licensure; in 1922 member of the House of Delegates of the American Medical Association, of which he was an associate member; for many years on the staff of the West Side Hospital in Scranton; died in the Clarks Summit (Pa.) State Hospital March 20, aged 79, of myocarditis and arteriosclerosis.

Allen, Herbert Williams ✠ San Francisco; Johns Hopkins University School of Medicine, Baltimore, 1900; clinical professor of medicine emeritus at the University of California Medical School; specialist certified by the American Board of Internal Medicine; an associate member of the American Medical Association; on the staff of the University of California Hospital; died April 21, aged 80, of carcinoma of the sigmoid.

Barnard, Charles Albert ✠ Portage Des Sioux, Mo.; Homeopathic Medical College of Missouri, St. Louis, 1905; served during World War I; formerly on the staff of St. Joseph's Hospital in St. Charles; died in the Veterans Administration Hospital in St. Louis April 1, aged 72, of bronchogenic carcinoma of the right lung with mediastinal metastases.

Beall, Mary E. ✠ Cucamonga, Calif.; Homeopathic Medical College of Missouri, St. Louis, 1895; Barnes Medical College, St. Louis, 1902; member of the staff of the Patton (Calif.) State Hospital from 1918 to 1947; died in San Bernardino March 4, aged 78, of adenocarcinoma of the breast.

Blezek, Frank M., Plainview, Neb.; Creighton University School of Medicine, Omaha, 1904; died in Osmond Feb. 9, aged 80, of coronary occlusion.

Cohen, Harry David, New York City; Fordham University School of Medicine, New York City, 1911; died Feb. 12, aged 70, of coronary thrombosis.

Compton, Wheeler Wilkinson ✠ Black Mountain, N. C.; Vanderbilt University School of Medicine, Nashville, Tenn., 1903; an associate member of the American Medical Association; member of the Medical Association of the State of Alabama; served on the staff of the Western North Carolina Sanatorium; formerly on the staff of Lloyd Noland Hospital in Fairfield, Ala.; died March 30, aged 78, of coronary disease.

Dailey, John Johnathan ✠ Tunnel Springs, Ala.; Medical College of Alabama, Mobile, 1906; died in Monroeville Jan. 4, aged 72, of carcinoma of the lung.

Dixon, Winfield Eugene, Santa Ana, Calif.; Louisville (Ky.) Medical College, 1894; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; formerly member of the city council; at one time practiced in Oklahoma City, where he was on the faculty of the University of Oklahoma School of Medicine; died March 19, aged 82, of cerebral thrombosis and arteriosclerotic heart disease.

Easton, Milo Tripp ✠ Peoria, Ill.; Northwestern University School of Medicine, Chicago, 1906; served during World War I; for two terms a member of the board of education; associated with the Methodist Hospital, where he died April 15, aged 70, of cerebral embolism and arteriosclerotic heart disease.

Flebbe, Richard Arthur ✠ Sutherland, Neb.; University of Nebraska College of Medicine, Omaha, 1941; member of the American Academy of General Practice; member of the school board; associated with the U. S. Public Health Service during World War II; on the staff of the Sutherland Hospital; died March 4, aged 40, of reticulum cell sarcoma, metastatic from nasopharynx to chest and pelvis.

Gordon, Donald Alexander ✠ Hamilton, Mont.; University of Michigan Medical School, Ann Arbor, 1931; served during World War II; died March 5, aged 48, of myocardial infarction.

Gray, Thomas P., Waverly, Ky.; University of Louisville (Ky.) Medical Department, 1901; died Feb. 8, aged 83, of carcinoma of the palate.

Grinnell, William Henry ✠ Rutland, Vt.; University of Vermont College of Medicine, Burlington, 1897; Bellevue Hospital Medical College, New York City, 1898; past president of the Rutland County Medical Society; on the staff of the Rutland Hospital; died March 26, aged 81, of cerebral vascular accident.

Hanson, Justus Greeley ✠ Northampton, Mass.; Medical School of Maine, Portland, 1898; for many years school physician; member of the surgical staff of the Cooley Dickinson Hospital, where he died March 27, aged 85, of bronchopneumonia.

Hughes, Thomas Jefferson ✠ Roanoke, Va.; University College of Medicine, Richmond, 1898; later studied in Scotland, Germany, and Austria; past president of the Roanoke Academy of Medicine; fellow of the International College of Surgeons; one of the founders of the Shenandoah Hospital; died in the University of Virginia Hospital in Charlottesville March 19, aged 80, of uremia and carcinoma of prostate.

Johnston, Frank Dallas ✠ Hookstown, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1904; an associate member of the American Medical Association; died April 8, aged 74.

Josif, Lazar, Santa Barbara, Calif.; University of Kolozsvár, Hungary, 1914; for many years practiced in East Chicago, Ind., where he was on the staff of St. Catherine Hospital; died March 26, aged 67, of carcinoma of the sigmoid colon.

Kemp, Alexander Hershman, Jamestown, N. Y.; Boston University School of Medicine, 1921; for 30 years served as a medical missionary of the Methodist Church in Portuguese Angola, West Africa; died in the Woman's Christian Association Hospital April 12, aged 63, of coronary thrombosis.

Kramer, Isaac Golde, New York City; Columbia University College of Physicians and Surgeons, New York City, 1908; member of the Medical Society of the State of New York; died in the Sydenham Hospital March 10, aged 75, of lobar pneumonia.

Lambert, John Vincent ✠ Chicago; Loyola University School of Medicine, Chicago, 1922; died April 11, aged 71, of coronary occlusion and arteriosclerosis.

Lieuallen, Fred Adcock ✠ Bend, Ore.; University of Oregon Medical School, Portland, 1905; for exemplary devotion to duty in France during World War I, held the Distinguished Service Cross and the Purple Heart; died in Newport Beach, Calif., April 2, aged 72, of bronchopneumonia and bronchogenic carcinoma.

Marbourg, Edgar Marcella ✠ Colorado Springs, Colo.; Jefferson Medical College of Philadelphia, 1888; an associate member of the American Medical Association; served during World War I; died Feb. 16, aged 90, of carcinoma of the colon.

Morgan, Samuel Pryor ✠ La Porte, Ind.; University of Louisville (Ky.) School of Medicine, 1921; an associate member of the International College of Surgeons; died Feb. 3, aged 57.

Nettleton, Irving La Field ✠ Bridgeport, Conn.; Long Island College Hospital, Brooklyn, N. Y., 1898; on the staffs of the Bridgeport and St. Vincent's hospitals; died April 22, aged 79, of arteriosclerotic heart disease.

Nobles, Eugene Rodman ✠ Rosedale, Miss.; College of Physicians and Surgeons, Memphis, Tenn., 1911; fellow of the American College of Surgeons; served as president of the Mississippi Division of the American Cancer Society; medical director of Dr. Nobles' Clinic-Hospital; on the staff of Rosedale-Bolivar County Hospital; died April 16, aged 66.

O'Brien, Thomas Aloysius, Kirkwood, Mo.; St. Louis College of Physicians and Surgeons, 1891; died Feb. 17, aged 86, of coronary thrombosis.

Ockene, Abraham, Union City, N. J.; Medical College of Virginia, Richmond, 1912; served during World War I; died in the Christ Hospital, Jersey City, April 14, aged 65, of pulmonary edema, arteriosclerotic heart disease, and diabetes mellitus.

Parsons, Frederick H. B., Chicago; Hering Medical College, Chicago, 1895; died April 22, aged 87, of arteriosclerotic heart disease.

Plunkett, C. M., Camden, Ark. (licensed in Arkansas in 1903); died in the Ouachita County Hospital April 12, aged 82.

Powell, Edgar Howard ✠ Valparaiso, Ind.; University and Bellevue Hospital Medical College, New York City, 1903; first chief of staff of Porter Memorial Hospital when it was opened in 1939; retired in 1950; died Feb. 26, aged 76, of metastatic carcinoma of the lung.

Quasebarth, Joachim Dittrich, Durham, N. C.; Philipps-Universität Medizinische Fakultät, Marburg, Prussia, Germany, 1949; assistant resident in psychiatry at the Duke Hospital; associated with Veterans Administration Hospital, where he died March 1, aged 35.

Ravn, Bjarne ✠ Merrill, Wis.; Northwestern University Medical School, Chicago, 1908; member of the Radiological Society of North America; past president of the Lincoln County Medical Society and the Ninth Councilor Medical District; served during World War I; radiologist for Langlade County Memorial Hospital in Antigo; on the staff of the Holy Cross Hospital, where he died April 10, aged 70, of myocarditis and uremia.

Richardson, Boyd M., Phoenix, Ariz.; Willamette University Medical Department, Salem, Ore., 1900; formerly associated with the Indian Service; died in St. Joseph's Hospital April 2, aged 77, of cerebral hemorrhage and carcinoma of the prostate.

Rosenfeld, Herman John ✠ St. Louis; Ludwig-Maximilians-Universität Medizinische Fakultät, München, Bavaria, Germany, 1923; member of the faculty of Washington University School of Medicine; died April 12, aged 57, of arteriosclerotic heart disease.

Snodgrass, William Coggeshall, Kenton, Ohio; Rush Medical College, Chicago, 1896; died March 14, aged 82.

Sullivan, William F., Providence, R. I.; College of Physicians and Surgeons, Baltimore, 1909; served the city department of public works; on the staff of St. Joseph's Hospital, where he died March 23, aged 68, of arteriosclerosis.

Summers, Franklin L., Hattiesburg, Miss.; Memphis (Tenn.) Hospital Medical College, 1909; died April 2, aged 71.

Thayer, Eugene, Wellesley Hills, Mass.; Harvard Medical School, Boston, 1892; at one time on the faculty of his alma mater; died in Boston Feb. 20, aged 88, of coronary thrombosis.

Toothaker, Joel Edwin ✠ Centralia, Wash.; University of Illinois College of Medicine, Chicago, 1916; served during World War I; died April 6, aged 64.

Torbert, James Rockwell ✠ Brookline, Mass.; Harvard Medical School, Boston, 1902; fellow of the American College of Surgeons; served on the staffs of the Faulkner Hospital in Boston, Milton Hospital and Convalescent Home in Milton, and the Lawrence Memorial Hospital in Medford; died Jan. 27, aged 80, of coronary heart disease.

Van Horne, James Apthorp, San Bernardino, Calif.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1901; served overseas during World War I; died April 22, aged 77.

Van Valkenburg, John LeRoy, Chicago; Long Island College Hospital, Brooklyn, 1895; died in the Cook County Hospital March 30, aged 84, of heart disease.

Weiss, Harry ✠ New York City; Columbia University College of Physicians and Surgeons, New York City, 1926; member of the Society of American Bacteriologists; served overseas during World War I; on the staff of the Sydenham Hospital and the Mount Sinai Hospital, where he died April 21, aged 63, of coronary disease.

Wells, Charles Henry ✠ Bexley, Ohio; Ohio Medical University, Columbus, 1900; served overseas during World War I; died April 16, aged 80.

Williams, William Randolph ✠ Sumter, S. C.; Meharry Medical College, Nashville, Tenn., 1920; died April 7, aged 61, of myocarditis.

FOREIGN LETTERS

ENGLAND

Psychiatric Research.—The Institute of Psychiatry of the University of London is the only university school in this country to be devoted entirely to postgraduate education in psychiatry. The salient features of its research program are summarized in the annual report of the institute for 1953-1954. In the department of psychiatry, Peter Sainsbury has been investigating movement and tension. The electromyograph has provided a means of measuring muscle tension in resting patients and of measuring the action potential accompanying muscular movement. By time-sampling motion pictures an alternative procedure has been devised of counting spontaneous movements. These methods have been used to study the relation between symptoms complained of by patients with morbid anxiety and the activity detected in their skeletal muscles during muscular relaxation. Carefully controlled experiments demonstrated that muscle tension, expressed as the sum of action potentials in specified muscles, was significantly greater in the anxious patients than in the healthy control patients. The more severe the symptoms of anxiety, the higher the muscle tension in the muscles of the arm and forehead. Further, muscle tension was significantly higher in the muscles of those parts of the body in which patients complained of discomfort, and the onset of headache during recording was accompanied by significant increase in muscle tension of the frontalis muscle.

A related study was concerned with the connection between emotion and motor and verbal expression. The gestures of a number of patients with a variety of psychiatric disabilities were measured electromyographically every 30 seconds, and a concurrent sound recording was made of the interview, during which topics known to be disturbing and others of neutral import were discussed. The heart rate was also recorded throughout. During the stressful periods of the interview, when painful topics were discussed, significantly more gestures (noncommunicative movements) were made by the patient. The greatest amount of gesture accompanied resentment. When some patients were interviewed a second time, the relations between any particular topic and the amount of gesturing were consistently the same as in the previous interview. These experiments confirmed the theory that changes in the innervation of skeletal muscles, issuing in spontaneous movement (even of small extent), are as much a part of emotion as are alterations in visceral innervation, to which so much attention has been devoted.

In the department of biochemistry, activation of the pituitary-adrenal system by phenylethylamines, some of which are analgesic, has been demonstrated. Although the adrenal ascorbic acid value was reduced by these amines irrespective of their pharmacological activity, only analgesics reduced cholesterol values consistently. Analgesic antagonists did not prevent the depletion of either ascorbic acid or cholesterol. Concentration of phenylethylamines by cerebral tissues in vitro has been demonstrated. Histochemical studies have shown that 5-nucleotidase in the growing rat brain appears in nerve fibers during maturation in possible relation to myelination. The properties of an enzyme specifically dephosphorylating thiamine pyrophosphate have been studied. The activities of this and other enzymes have been found to change in thiamine-deficient cerebral tissues.

In the department of neurophysiology, studies to elucidate the relationship between the site of epileptic foci, the site and nature of associated lesions, the seizures, and the psychological changes have been instituted. It is already clear that the psychological changes so commonly associated with temporal lobe epilepsy are not directly related to the continuance of epileptic discharge. Electrical stimulation of the exposed brain at operation, and particularly of deep structures such as the hippocampus, has shown that firing can occur in such structures without spread to areas of the brain that are normally under observation during electroencephalographic investigations. Electrocorticographic studies have demonstrated the multiplicity of firing areas even in the presence of a single lesion, the areas often being outside the scope of a surgical ablation.

In the psychology department, work in the animal laboratory has demonstrated the doubtful validity of many of the methods of producing experimental neurosis and has suggested two possible lines of approach. One, an attempt to isolate a general factor of behavior abnormality analogous to neuroticism in human beings, has so far failed because of the degree of interaction between tests presented serially. The second consists in the further development of physiological tests differentiating normal humans and neurotics and applying them to rats, so that the latter can be placed on the same normal-neuroticism continuum.

Oxygen and Artificial Respiration.—In first-aid practice the Medical Research Council recommends that carbon dioxide not be given with oxygen in the resuscitation of subjects requiring and receiving artificial respiration. K. W. Donald and W. D. M. Patin (*Brit. M. J.* **1**:313, 1955) emphasize that without immediate artificial respiration all other measures will be useless. The administration of oxygen to patients receiving artificial respiration is given unqualified support, but, if carbon dioxide is administered during artificial respiration, the partial pressure of carbon dioxide in the lungs and other highly vascular organs will be raised to highly abnormal levels unless a marked further increase of ventilation can be induced. Under first-aid conditions the rescue worker does not know the initial levels of carbon dioxide in the body of the subject nor the ventilatory volumes he is producing. The administration of carbon dioxide under these conditions is therefore uncontrolled and may cause a dangerous accumulation of carbon dioxide in the blood. Overventilation and the lowering of the body pCO_2 by manual methods under first-aid conditions is very unlikely to occur for any significant period; it would not alter the prognosis, and, even in the most improbable event of its being diagnosed by a first-aid worker, carbon dioxide therapy would be unnecessary and undesirable. The ability of even slight-to-moderate rises of body pCO_2 to increase the viability and promote further spontaneous activity of a failed or failing respiratory center is also questioned.

The dangers of high concentrations of carbon dioxide in the body are stressed. These include depression of the central nervous system and respiratory center, vasomotor depression with peripheral vasodilatation, dangerous cardiac arrhythmias, and fall in body temperature. The sudden removal of the gaseous acidosis also causes severe symptoms. Even in normal subjects the breathing of 7.5% carbon dioxide for 20 minutes produces a shock from which the system does not wholly escape for several hours.

Cyanacetic Acid Hydrazide.—There is no doubt, according to Thomas Marmion (*Brit. J. Tuberc.* **49**:9, 1955), that cyanacetic acid hydrazide will be a useful drug for patients unable to tolerate isoniazid and will be of great value in the treatment of chronic tuberculosis. This conclusion is based on the findings in a series of 29 patients who received cyanacetic acid hydrazide for periods up to five months at the British Ministry of Health Sanatoria at Davos, Switzerland. All the patients were men with chronic bilateral pulmonary tuberculosis, 20 of whom had failed to respond satisfactorily to prolonged treatment with other chemotherapeutic agents such as streptomycin, *p*-aminosalicylic acid, and isoniazid. The drug was given orally in a daily dosage of 8 mg. per kilogram of body weight, given in three doses, one after each meal. Nine patients, who had either not received any previous chemotherapy or had only had it for short periods, were given in addition either streptomycin or *p*-aminosalicylic acid. No marked clinical changes were seen throughout the trial. The most noticeable result was a rapid fall in the sedimentation

The items in these letters are contributed by regular correspondents in the various foreign countries.

rate. Of the 10 patients whose sputum was positive at the start of the trial, the sputum of 2 became negative after three months. Radiographic assessment showed that, of the 15 patients with fibrocaseous lesions, 3 showed marked improvement, 5 showed slight improvement, 6 showed no change, and one was worse. Of the 14 patients with fibrous lesions, 2 showed marked improvement, 5 showed slight improvement, 6 showed no change, and one was worse. Four patients had side-effects severe enough to require cessation of treatment. These included severe conjunctivitis and paraocular edema, urticaria, acute frontal headache, and persistent paresthesia of the legs. Fifteen patients had mild paresthesias, constipation, excitability, hematuria, and sweating. Marmion considers these results to be significant in view of the nature of the disease and its course before treatment.

National Research Development Corporation.—In 1948, Parliament passed a Development of Inventions Act, setting up a National Research Development Corporation. One of its functions was to acquire, hold, dispose of, and grant rights in connection with inventions resulting from public research and, where the public interest so requires, in connection with inventions resulting from other sources. A review of the corporation's first five years describes the part it played in developing the manufacture of cortisone. Investigations initiated by the Medical Research Council revealed that waste sisal juice was a relatively copious source of the rare chemical, hecogenin, which offered prospects of acting as a starting point for the synthesis of, among other steroid hormones, cortisone. At this stage the independent sisal plantations had no way of knowing whether the pharmaceutical industry would want to use hecogenin for cortisone synthesis and could not fix a price for this product. The pharmaceutical industry on the other hand had no hecogenin with which to experiment and thereby establish a price at which it would be economic to buy it. The corporation commissioned a pilot plant in Kenya, underwrote a full-scale production plant to be erected on the land of a progressive sisal plantation in Tanganyika, contracted for the output thereof, and placed a development contract for the refining process before any clear indication had been received from firms of the pharmaceutical industry that hecogenin would ever in fact be wanted. Thus, within two and one-half years of the original discovery by the Medical Research Council, a British firm has been enabled to begin small-scale production of cortisone in the United Kingdom based on hecogenin produced in East Africa and the West Indies.

New Analgesic.—A preliminary report by G. B. Chesher and others (*Nature* **175:**206, 1955) suggests that in the experimental animal 4-hydroxyisophthalic acid, a by-product of the manufacture of salicylic acid, is less toxic and more effective as an analgesic than aspirin. Its analgesic action was demonstrated in young rats, in which the median effective dose was found to be 303 mg. per kilogram of body weight. In comparative tests it exhibited 4.1% of the activity of codeine. It possesses about 10% of the toxicity of codeine. The comparative tests with aspirin gave the following results. The L. $D._{\infty}$ for 4-hydroxyisophthalic acid was 1,071 mg. per kilogram of body weight, compared with 541 mg. per kilogram for aspirin. A dose of 300 mg. of aspirin per kilogram of body weight failed to show any analgesic effect, whereas the median effective dose of 4-hydroxyisophthalic acid was 303 mg. per kilogram. In comparative tests of antipyretic activity in rabbits, it was found that 4-hydroxyisophthalic acid was about as effective as aspirin in counteracting fevers caused by a preparation of pyrogen from Proteus vulgaris. Chronic toxicity tests in mice indicated very low toxicity of the same order as that of aspirin. Excretion experiments in rats showed that within 24 hours about 40% was excreted unchanged in the urine and 25% in the feces.

Salmonella in the Gallbladder.—To discover whether the carrier rate of Salmonella organisms in human gallbladders in this country is anything like the figure of 10.6% reported by Ortel in Germany, Elizabeth C. Armstrong and Rhoda M. Allison (*Month. Bull. Min. Health* **14:**6, 1955) have investigated bacteriologically 200 gallbladders removed at autopsy and 50 gallbladders removed at operation in one of the leading industrial towns of Yorkshire. The postmortem series included 118 males and 82 females, whose ages ranged from less than 1 year to over 70; 75% of them were over 50. Thirty-three of the gallbladders contained calculi, most of which had not caused any clinical illness. The operative series consisted of 39 women (aged 18 to 68 years, 60% being in the 40 to 59 age group) and 11 men (aged 45 to 77 years, 82% being in the 40 to 59 age group). Gallstones were found in 15 of the women and in 8 of the men. S. typhimurium was grown in pure culture from the bile and mural tissue of only one of the autopsy specimens. The specimen was from a man, aged 68, who had died of rupture of an abdominal aortic aneurysm; there was no evidence of a gastrointestinal infection, and the nutritional status was normal. No Salmonella organisms were isolated from any of the gallbladders removed at operation.

Illicit Drug Traffic.—The illicit drug traffic has never been a serious social problem in Great Britain. Provisional figures for 1954 show that the total convictions in connection with illicit drugs of all types were about 217, compared with 172 in 1953. Of this total, 141 convictions involved cannabis indica, compared with 83 in 1953. This increase is not causing undue concern, as it is attributed primarily to the police and custom authorities becoming more completely masters of the situation. In Liverpool, for instance, hitherto the black spot of opium smuggling in this country, the police are confident that, as a result of an intensive drive last year, the situation is now well under control. This claim is supported by the fact that the drug traffickers are now turning their attention to Bristol and Avonmouth. Most of the smuggled cannabis indica, which is the major problem at the moment, comes from Rangoon, but a fair amount comes from Aden, Bombay, Bahrein, and other ports in the East. The drug carriers are always seamen, as a rule Indians and Pakistani. There seems to be no evidence that any of the illicit drugs have a West Indian or American source.

Exports of Drugs.—In 1954, British exports of pharmaceutical products reached 94 million dollars, an increase of more than 10 million dollars over the 1953 figures. Export sales were therefore not far short of the 103 million dollars estimated to be the current annual cost of drugs to all branches of the National Health Service. Among the individual items for which large increases in exports were recorded were insulin, plasmodicides, barbiturates, vitamins, sulfonamides, and aspirin. The number of aspirin tablets exported was 609 million and of sulfonamide tablets 538 million. Total exports of penicillin and its preparations were higher in volume, but the fall in world prices was reflected by a decrease in value from $12,500,000 to $9,500,000. This decline in value was almost made up, however, by other antibiotics. Australia displaced India as Britain's most important customer for drugs. Exports to the United States and Canada were $848,400 and $1,985,200 respectively.

Cortisone and Corticotropin for Acute Leukemia.—Because supplies of cortisone and corticotropin are still strictly controlled by the Ministry of Health, it is practically impossible for a private patient to obtain them. Even a National Health Service patient can obtain supplies only through certain approved hospitals. The Ministry has added acute leukemia (in either children or adults) to the list of conditions for which supplies of cortisone and corticotropin additional to those for ordinary treatment can be sent to hospitals receiving regular monthly issues of these substances. Additional supplies are already being sent to these hospitals for the treatment of adrenocortical hypofunction, adrenal hyperplasia, adrenalectomy, pituitary dysfunction, disseminated lupus erythematosus, periarteritis nodosa, pemphigus, exfoliative dermatitis, hemolytic anemia, purpura, and sarcoidosis.

Typhoid in Yorkshire.—An outbreak of typhoid fever occurred in Yorkshire in December, 1954, and January, 1955. About 29 people have been infected, of whom 6 were infected by family and household contacts. The diagnosis has been confirmed in five cases. The responsible organism is type El. Milk and water supplies have been excluded as the cause of the outbreak. A certain

food, which was eaten by all patients identified as having primary cases, is considered the probable cause. The detection of the outbreak was complicated by the fact that it began during an outbreak of influenza. There is some evidence that the use of chloramphenicol in the treatment of what was thought to be continued fever due to a complication of influenza may have obscured the picture of early typhoid in some patients. The symptoms most commonly observed were fever, nosebleed, headache, and prostration.

British and World Medical Associations.—At a meeting of the Council of the British Medical Association in January, Dr. J. A. Pridham, the chairman of the International Relations Committee, reported that in the committee's view the crisis which faces the World Medical Association (W. M. A.) is serious enough to justify an immediate and thorough examination of the organization, and after effecting such economies as are practicable the council of the W. M. A. should work out a program of activity within the revenue it can reasonably expect to receive.

Poliomyelitis Prize.—The Edinburgh branch of the Infantile Paralysis Fellowship has made a gift of $2,856 to the University of Edinburgh for the purpose of founding a Lawrence Poole memorial prize to be awarded for the best achievement, practical or theoretical, in rehabilitation after poliomyelitis.

FINLAND

Tuberculous Meningitis.—Dr. Ole Wasz-Höckert in *Nordisk medicin* for March 17, 1955, states that every patient with tuberculous meningitis who is treated by an experienced specialist in a relatively early stage of the disease should recover without permanent ill-effects. In a series of 181 patients treated since 1949, including 47 with disease complicated by miliary tuberculosis, there were 20 infants and 104 children between the ages of 1 and 4 years. The patients were classified according to whether they were treated with streptomycin alone, streptomycin and *p*-aminosalicylic acid, isoniazid alone, or isoniazid in combination with streptomycin, *p*-aminosalicylic acid, and cortisone. The total mortality was 42.5%, but it was down to 24.6% for the 61 patients treated since the introduction of isoniazid. The efficacy of isoniazid is such that streptomycin may no longer be considered necessary for intrathecal administration, but the author is not yet prepared to follow those clinicians who are already advocating treatment with isoniazid, given by mouth, to the exclusion of other drugs and methods. It may still be necessary to apply radical operative measures designed to relieve intracranial obstruction; among the 40 patients whose skulls were trephined there were 8 whose intracranial obstruction was relieved. The results of treatment with cortisone cannot yet be evaluated, but it would seem to be indicated for cachectic patients whose reaction to other treatment is disappointing. The author urges concentrating all patients with tuberculous meningitis in a few, well-equipped hospitals provided with good bacteriological laboratories and staffed with ophthalmologists and surgeons with experience in trephining and allied operations.

Chemoresistance of Tubercle Bacilli.—At a meeting of the Nordic Phthisiologists, Drs. K. Kivikanervo, E. Brander, and J. Haapanen stated that, of 191 patients, 29 harbored tubercle bacilli resistant to streptomycin; 49 harbored organisms resistant to isoniazid; 12, organisms resistant to *p*-aminosalicylic acid; 19, organisms resistant to two of these remedies; and 3, organisms resistant to all three. At the outset of treatment 97% of the patients had demonstrable tubercle bacilli, and on the completion of treatment this figure was down to 13%. Various combinations of the three remedies were used. In one group of 58 patients 1 gm. of streptomycin was given every third day, and isoniazid and *p*-aminosalicylic acid were given on the intervening days. In another group of 42 patients, streptomycin was given every other month, and in the alternate months isoniazid and *p*-aminosalicylic acid were given daily. No great difference could be noted between these two systems. A combination of the three remedies offers the best chances for preventing chemoresistance.

MEXICO

Brucellosis.—In the last two decades many investigations of brucellosis in Mexico have been carried out by Dr. Ruiz-Castañeda, who founded and organized the Center for the Study of Brucellosis. In *Gaceta médica de México* (84:395-403 [Nov.-Dec.] 1954), a study of nearly 9,000 positive blood cultures of Brucella, taken from more than 3,000 patients in Mexico since 1937, has shown Br. melitensis in over 99%. It is probable that in our environment, cows are naturally infected with Br. melitensis and it is transmitted to man more easily than is the Brucella abortus from these same animals. The incidence of brucellosis in dairy cattle is high, but there is still a notable scarcity in beef destined for the slaughter houses in Mexico City. This is contrary to the situation in Argentina, Uruguay, and the United States. In these countries human infection is principally of the Br. abortus type, acquired mainly through handling of living and dead animals. The differences mentioned may explain the low incidence of human infection with Br. abortus in Mexico.

Although in some countries goats are seriously affected by brucellosis, the infection in goats in Mexico is largely asymptomatic. Thus people living among apparently healthy goats consume their products without pasteurization. This has resulted in a high incidence of brucellosis in the human population throughout Mexico. It is estimated that at least 200,000 persons have been infected with the disease in the last 10 years. In view of the chronicity of the disease, and the difficulty in its control, a large proportion of these persons probably still suffer from this infection. The diagnosis is based preferably on blood cultures, but, since Brucella organisms are difficult to cultivate, Dr. Castañeda has developed a simplified technique and has increased the percentage of positive isolations. On the other hand the use of modern chemotherapeutic agents has reduced the frequency of these positive isolations. For this reason it is necessary to use other methods such as rapid agglutination. The patient's blood is mixed with accurately titrated antigens. An immediate result is obtained, and no false positive reactions are observed. This test has been used with success in specialized brucellosis centers in other countries. Some authors believe that only tests positive in titers of 1:320 or more indicate active infection. On the other hand, bacteremic cases that do not produce an agglutination in titers over 1:100 or in which the agglutination is inhibited by immunological phenomena as yet unexplained are relatively frequent. In view of these irregularities, Dr. Castañeda has developed a test, called surface fixation, that makes use of filter paper on which a drop of antigenic "ink" previously has been placed.

During the bacteremic stage of the disease there is active reproduction of the pathogenic agent. This stage is usually but not necessarily symptomatic, and the patients may even be afebrile. This may be followed by a remission of variable duration, after which there may be a relapse due to a persistence of the infection in an intracellular form. The cellular reactions, including the phagocytosis are sufficient to keep the infection under control and to produce antibodies.

Authorities are reluctant to make a diagnosis of chronic brucellosis in the absence of definite laboratory findings, but it is not possible to overlook the large number of patients in whom symptoms cannot be explained and in whom the only manifestation of brucellosis is an intense local or general reaction when brucella antigens are injected. The continued failures of chemotherapy and antibrucellotic serums in many patients is explained by the fact that the pathogenic agent is able to resist the action of these substances in the intracellular stage. To interpret the therapeutic results in brucellosis Dr. Castañeda advises physicians to remember that it is an infection with a tendency toward spontaneous cure; clinical improvement frequently occurs in spite of the continuance of the bacteremia; and bed rest, good diet, and minimal symptomatic treatment often lead to a cure less liable to relapse than that obtained through the use of antibiotics. He believes that to judge the effectiveness of any new treatment, the effect on the course of the bacteremia must be known. Most of the patients who come to his clinic with bacteremia continue their positive blood cultures for at least two months. This is true in acute as well as subacute and chronic cases.

A variety of antibiotics and vaccines may lead to rapid clinical improvement, but it is desirable to use methods that will prolong the remissions and at the same time prevent the complications due to antibiotic therapy. Dr. Castañeda gives 160 mg. of oxytetracycline, which is readily phagocytized, subcutaneously each week, hoping that phagocytes may carry it to the spleen and lymph glands. Remarkable effects are seen from this treatment on the course of the bacteremia. The combination of oxytetracycline with streptomycin and sulfadiazine has resulted in a marked reduction in clinical recurrences. Since this method of treatment uses very small amounts of oxytetracycline, immediate suppression of acute symptoms is not to be expected. In severe cases larger doses of the antibiotic are given by mouth for three to five days.

SWEDEN

Intussusception.—Although in the Anglo-Saxon countries intussusception is treated by early operation, the rule usually adopted in Sweden is to give conservative treatment with a barium enema under radiological control a fair trial and to resort to an operation only when such treatment has failed and the intussusception has lasted more than 24 hours. In *Nordisk medicin* for Feb. 3, 1955, Dr. G. Pettersson reported a series of 249 patients treated with this combined method. Of these patients, 85% were under the age of 2 years. Among the 135 patients treated by a barium enema under radiological control there were no deaths, whereas 11 of the 114 patients operated on died. In the period under review (1936 to 1953) the mortality remained fairly constant with an average of 4.5%. It was disappointing that advances in recent years with regard to anesthetics, fluid balance, and antibiotics were not reflected in a marked fall in deaths from intussusception. Pettersson admits that American and English surgeons currently report an operative mortality of less than 1%, but he is not prepared to abandon the combined method, with conservative treatment given the first opportunity. In the future, however, he will have less use for a prolonged manual repositioning of the intestines and more use for a prompt primary resection.

Chlorpromazine Dermatitis.—Since the spring of 1954 trials have been carried out with chlorpromazine in patients with mental disease at the St. Lars Hospital in Lund. Writing in *Svenska läkartidningen* for Feb. 18, 1955, Ask and Grubb draw attention to the risk of nurses developing chlorpromazine dermatitis and report three cases. None of these nurses had previously presented any manifestation of allergy to other substances. Twenty-four members of the hospital staff have been subjected to skin tests for allergy to chlorpromazine, and seven of them have been found sensitive to the preparation of the drug sold in Sweden. While skin tests were positive in the forearm, they were apt to be negative in the skin of the back that had not been closely in contact with the drug. The dermatitis from which the nurses suffered was characterized by itching, redness, and swelling of the skin of the hands, forearms, neck, and face. Conjunctivitis and edema of the eyeballs were also observed. These nurses had to be shifted to wards where the drug was not used, and it became necessary to take special precautions as for a major operation (with smocks, gloves, spectacles, and masks) when nurses had to give injections of chlorpromazine.

Acute Barbiturate Poisoning.—At the Caroline Hospital in Stockholm, Dr. Lars-Erik Böttiger has analyzed a series of 256 patients with barbiturate poisoning admitted during the period 1944 to 1953 (*Nordisk medicin,* Feb. 10, 1955). In 1944 such cases represented only 0.6% of all the admissions to hospital, whereas in 1953 the corresponding figure was 1.9%. Women were responsible for 62.5% of these admissions, but, whereas the mortality was only 3.1% for women, it was 8.3% for men, who evidently took their attempts at suicide more seriously. Between 70 and 80% of all the suicides in Sweden concern men, who often prefer more drastic methods than the taking of barbiturates. Böttiger's analysis of the causes of attempted barbiturate poisoning show that marital conflicts headed the list with 70 cases; love affairs came second with 32 cases; and family quarrels came third with 27 cases. Further down in the list was chronic alcoholism with 12 cases. The barbiturates found to be more fatal were those whose rate of excretion was slow (8 to 21 days). Böttiger urges that the two worst offenders in this respect (fenemal and diemal) be banned in favor of less dangerous barbiturates. At the Caroline Hospital gastric lavage is now undertaken only when the patient is wide awake. Unconscious patients, who are known with certainty to have taken the poison within the preceding few hours, are subjected only to cautious aspiration of the contents of the stomach. Every effort is made to establish freedom of the respiratory passages, to provide oxygen and adequate fluid therapy, and to prevent shock and infection. Stimulants have fallen into disfavor and during 1953 were not used. Although the mortality was 7.2% in the period 1944 to 1948, it was down to 4% in the period 1949 to 1953.

Alcoholism.—The alcoholics' department of the St. Erik's Hospital in Stockholm was opened in 1945 with 18 beds to deal with their occupants as inpatients, but, with the growing popularity of treatment with disulfiram, the outpatient activities of this department had eclipsed its inpatient activities completely by May, 1950. In a study of 664 patients treated between Oct. 1, 1948, and Dec. 1, 1950, Dimberg and Salum point out in *Svenska läkartidningen* for March 11, 1955, how disulfiram has influenced the outlook for patients willing to be treated with it. Because it may have to be taken over a period of several years in many cases, its dosage is kept as low as possible. The normal daily dose is now usually 0.5 gm. for the first week or two. Thereafter there is a gradual reduction to about half this amount or even less. It is a matter of convenience whether the drug is given every day or two or only two or three times a week. In this series 73% of the patients were between 30 and 50 years of age. Only three were under 20. This scarcity of adolescents not only reflected their unwillingness to submit to treatment but also reflected the notoriously bad prognosis for this age group. In the age group 30 to 60, the prognosis improved with the patient's age. Most of the patients were chronic alcoholics, and side-effects of the treatment were observed in about 70%, but in only 7.5% did these side-effects necessitate the discontinuation of the treatment. There were no permanent ill-effects, and the most important side-effects were lassitude in 50.9% and gastrointestinal disturbances in 32.1%. Complete recovery was achieved in 10.8% and almost complete recovery in 30.4%. If the partial recoveries observed in 32.5% were added, it could be claimed that nearly 75% benefited from this treatment. An analysis of the 102 patients whose treatment had been terminated and for whom there was a subsequent observation period of at least 15 months showed that 90% of them benefited from it.

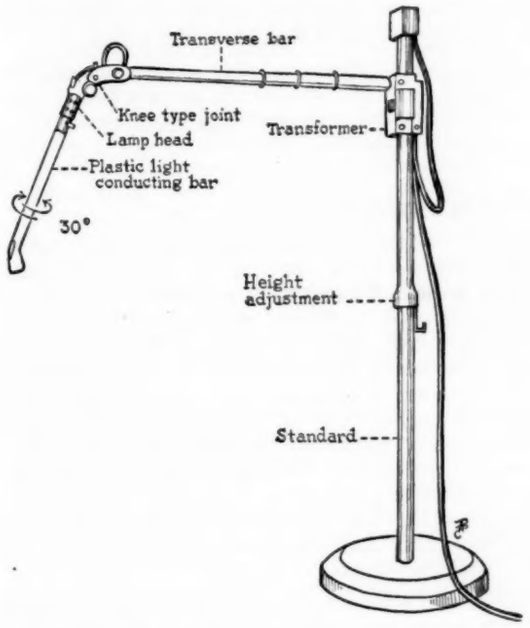
Most Common Causes of Death.—The Swedish Statistical Central Bureau has recently published its annual report on the most common causes of death at different ages. In 1951, among men between the ages of 35 and 40 in Stockholm, suicides were responsible for 30% of all the deaths. Modern chemotherapeutic drugs and antibiotics have greatly reduced the death rate from infections and thus have given greater prominence to the death rate from suicide. The arteriosclerotic and degenerative diseases of the cardiovascular system in men between the ages of 55 and 60 accounted for 18.7% of the deaths in rural areas, whereas the corresponding figure in Stockholm was 29.4%. In urban areas, not including Stockholm, this figure was 27.3%. For Sweden as a whole it was 20.5%. This figure is presumably an underestimate, as in rural areas the part played by this group of diseases may be overlooked.

Death of Dr. Sjöqvist.—Olof Sjöqvist, a neurosurgeon, was born on Dec. 9, 1901, and died on Dec. 4, 1954. Much of his original work was concerned with trigeminal neuralgia, for which he devised an operation aiming at the elimination of the senses of pain and temperature without inducing serious concomitant paresthesia. The success achieved in the relief of pain was somewhat vitiated by a relatively high relapse rate and a certain operation mortality. Sjöqvist did pioneer work in the treatment of intracranial aneurysms, and he was in favor of direct intracranial operations instead of the indirect methods previously in use.

CORRESPONDENCE

LAMP FOR SURGERY

To the Editor:—The Schreiber neurosurgical lamp, originally presented by Dr. Frederic Schreiber of Detroit, in 1946 (Schreiber and Shuttleworth: *J. Neurosurg.* **4**:290, 1947) has proved an invaluable aid in our hands in general and thoracic surgery. The mechanical description of the lighting mechanism of the lamp is well covered in Dr. Schreiber's original article. One important change has been made in its basic structure. As originally described, the light was portable and fastened to the rail of the operating table. This necessitated sterile draping of the standard, a cumbersome procedure. The new model "B" is a floor model on a sturdy floor standard and requires no draping. The plastic light-conducting bar is sterilized in oxycyanide of mercury. The overhead fixed light is adjusted to give good over-all lighting of the surgical field. The Schreiber light is then used to light the crucial operative area and, because the surgeon himself adjusts it, the light is exactly where he wants



it at the exact time he wants it there. The light provides a shadowless, cold beam about 6 to 8 cm. in diameter at average operating depth. The figure shows all of the light's composite parts.

We learned of this light from Dr. Warren Hastings in 1947 and have used it steadily since Jan. 1, 1948, in a total of 1,540 procedures. We have found it to be most useful in operations obscured by an overhanging ledge. The situations for which we would recommend the light are: lumbar sympathectomy, vagotomy (subdiaphragmatic), diaphragmatic hernia from below, thoracotomy (especially hilar dissection), cholecystectomy and common duct procedures, cervical sympathectomy, cervical ribs, splenectomy, and adrenalectomy. The light is used on the surgeon's side of the table in all procedures except lumbar sympathectomy, when it is brought in from the opposite side. We unreservedly recommend the Schreiber neurosurgical lamp as a valuable and time-saving adjunct in general and thoracic surgery. It is manufactured and sold by Harold L. Feighner and Company, 10010 Roseberry Ave., Detroit 13.

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OBESITY

To the Editor:—In the editorial in The Journal of March 26, page 1126, on obesity, attention was wisely drawn to the importance of psychological or psychopathological factors in determining overeating and resulting obesity and a recent work was quoted on the real value of psychotherapy in suitable cases. However, the endocrine glands were dismissed with a single sentence stating that "the older theories that attributed obesity to an endocrine disturbance have been shown to be erroneous." This dogmatic statement appears to ignore the important influence of several hormones on appetite and on determining the relative protein-fat constitution of the body, as well as some challenging clinicopathological facts. Even so, I would not venture to comment, by letter, on an American editorial if it were not for the fact that the statement ignores fundamental work carried out in the United States, particularly the demonstration by Kendall of the Mayo Clinic of the influence of adrenal compound A on fat, in mice, and the studies of Jean Mayer of Harvard, who drew an analogy between the diabetic syndrome of hereditarily obese mice and insulin-resistant diabetes in the obese man (or woman).

I would like to quote one paragraph from an address I was privileged to give to the New York Academy of Medicine in 1951: "It is some 15 or more years ago, at a discussion of the Royal Society of Medicine on adiposity that I queried the 'gluttonists' somewhat epigrammatically,

> It is as inadequate to state that adiposity
> is due to overeating as it would be to state
> that diabetes insipidus were due to overdrinking.

In addition to hypothalamic lesions, I postulated hyperactivity of the pituitary and adrenal glands, a thesis which did not exclude polyphagia as an intermediate mechanism. For example, if an infant of six months suddenly develops a voracious appetite and enormous adiposity and dies at twelve months from an adrenal cortex adeno-carcinoma, no one would dissociate the tumour from the polyphagia or the adiposity. Physiological, or pathological, hyperfunction without neoplasm can be just as relevantly aetiological. Further, there are qualitative differences in tissue composition resulting from hormone induced polyphagia. Pituitary growth hormone and/or testosterone produce a relative increase in protein whereas adrenal corticosteroids, particularly compound A, produce an increase in fat (Kendall). Further, relative increases in the proportion of fat may be associated with no increase in body weight or even a decrease (Compound E). There is even a third factor, less easily understood. Young adrenalectomised rats put on less weight and less fat than their paired fed control rats. With these very important qualifications, no one would deny the physical laws of energy and food intake in relation to adiposity."

The influence of the hormones on appetite is not more important than their influence on the relative body composition, e. g., increase of protein-fat ratio by growth hormone and of fat-protein ratio by insulin (Young, F. G.: *Biochem. J.* **39**:515-536, 1945; *Brit. M. J.* **2**:1167-1173, 1951. Salter, J., and Best, C. H.: ibid. **2**:353-356, 1953). Young has also pointed out that the gain in weight under the influence of some hormones (e. g., anterior pituitary extracts) occurs even when "the animals receive daily throughout the experiment a constant amount of food sufficient just to maintain a steady body weight before pituitary treatment began," an apparent defiance of the laws of energy but explicable on the relative proportion of body fat and protein metabolized under hormone influence. The adiposity that follows castration in some species has been so long known that it is conveniently ignored. The effect of cortisone in inducing adiposity in many patients treated for long periods, with high doses, for collagen or allergy diseases is by no means unrecognized. The influence of puberty, pregnancy, and the climacteric on fat deposition is obvious, and, readily admitting individual differences in endocrine constitution, the contrast between the

average girl of 20 and her matronly mother (which she in her turn will become) is difficult to understand except on an endocrine basis.

Although a letter is not a suitable medium for a systematic survey, I hope that I have touched upon a few points that would justify further thought on theories (and facts) that need elucidation but cannot be dismissed as irrelevant to the consideration of obesity.

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DRUG SAMPLES

To the Editor:—It is important that attention be called to the dangers to which children are exposed when drug samples are accessible to them, as was done in the editorial in The Journal March 19, 1955, page 1024, and to the fact that the illicit sale of drugs by persons who collect these samples is also a possibility. Ways in which drug samples may safely be disposed of were not suggested. I have now a good-sized paper carton that in a few months has been filled with ointments, sedatives, laxatives, antibiotics, vitamins, hematinics, and what have you, and frankly I don't know what to do with them. These samples are for the most part unsolicited, and I would suggest that the pharmaceutical houses should not clutter up the mails unless doctors request specific products and literature. I often return in the mail material that is unsolicited when marked "Return Postage Guaranteed."

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To the Editor:—Attention is called to an editorial that appeared in The Journal of March 19, 1955, page 1024, entitled "Danger of Discarding Samples." At the present time, I have several large cartons of samples that have been discarded as far as I am concerned, and to date I have been unable to find anyone who would like to have them to use. At various times I have offered them to numerous agencies, including church missions, but no one as yet has shown any interest in receiving them. If you know of some agency that would like these samples, I would be very appreciative of knowing who to contact, as I would be glad to get them off my hands and into the hands of someone who could really use these samples.

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CITRIC ACID INTOXICATION

To the Editor:—The observation of Bunker and his co-workers in The Journal, April 16, 1955, page 1361, that sodium citrate cannot be administered intravenously in unlimited quantities without the risk of harmful effects to the patient is not new. When I reported 40 years ago (*Surg., Gynec. & Obst.* **21**:37-47 [July] 1915), the animal experiments that were the basis of citrate transfusion as it is used today all over the world, together with a report on 18 patients, I pointed out that sodium citrate is only "conditionally atoxic." I stated that 15 gm. of sodium citrate given to an adult must be considered a fatal dose and that it would not be advisable to go far beyond a dose of about 5 gm. of sodium citrate when giving citrated blood. In those days transfusions were given very rapidly and in relatively small amounts (500 to 1,000 cc.). Many years later, when the drip method came into general use for intravenous therapy, it was noticed that, because of the rapid excretion of sodium citrate from the body, larger quantities of sodium citrate could be administered without the slightest injury to the patient. In recent years the use of blood as a therapeutic measure has turned in many cases to an abuse. Not only is transfusion used indiscriminately but it has become fashionable to give very large amounts of blood, which may overload the circulatory system unnecessarily and may be a contributory factor to a fatal outcome. Nowadays it is not at all the exception to give a patient 10 or even 15 qt. (9,463 or 14,194 cc.) of blood during a major operation.

The authors present in table 2 very brief abstracts of 28 cases. In 25 of these patients 2,000 to 15,000 cc. of blood were administered. Twelve quarts and 15 qt., respectively, were given to two patients. No definite conclusions can be drawn from this table, which gives no details such as length of operation and general condition of the patient before and during the operation. In their summary the authors suggest that whenever citric acid intoxication following large citrate transfusions is feared or whenever some liver damage is present, citrated blood should be avoided altogether and be replaced by decalcified blood collected by passage across a cation exchange resin and packed or resuspended red blood cells. Both these methods are much more complicated than the simple addition of 5 cc. of a 30% solution of sodium citrate to 500 cc. of the donor's blood.

May I suggest that for many reasons excessive amounts of blood given by transfusion be avoided as much as possible. However, if in rare cases these large quantities of blood are strictly indicated, it may be advisable to administer calcium lactate or calcium glutinate intravenously to counteract the possibility of a toxic effect of too large a dose of sodium citrate.

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POTASSIUM INTOXICATION

To the Editor:—I do not question the wisdom of Dr. Messner's warning in The Journal, April 16, page 1433, concerning the dangers of potassium intoxication in infancy after the use of large amounts of intravenously given potassium penicillin G. Certainly, in infants infusions containing more than 20 mEq. per liter of potassium are dangerous, even in correcting deficiencies! When one is in doubt, 12-14 mEq. per liter should be considered the upper limits of safety. However, I do question the correctness of a diagnosis of potassium intoxication. The occurrence of a diuresis on the night of admission and the fact that potassium levels were never measured above 6.5 mEq. per liter both negate a diagnosis of potassium intoxication. Clinical signs of intoxication with serum potassium levels under 8 mEq. per liter would be extremely unusual.

However, two other possible diagnoses are to be considered. The first is tetany; hypocalcemia could have occurred secondary to a "relative alkalosis" and/or secondary to a dilution of the serum calcium with a hypocalcemic infusion. The second is water intoxication. It should be noted that the infant received a hypotonic solution on the night of admission (102.5 mEq. per liter total cation content; the presence of dextrose is not significant, since it is metabolized to carbon dioxide and water). The net effect of this is borne out by a serum cation level of 134.5 mEq. per liter on the morning after admission. The convulsions and the stuporous condition of the infant would be consistent with this diagnosis. The improvement of the infant on the day that the serum cation level was 145.5 mEq. per liter would be added confirmation. I cannot explain the marked improvement of the infant within an hour after an infusion containing less potassium than one previously used was started. However, it is extremely unlikely that in that given period of time any marked changes could have occurred in the serum potassium concentration, even should the level have been in an extremely toxic range, which it was not. The physiology of potassium is much too complex for such an event to have occurred in so brief a period.

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LAW DEPARTMENT

MEDICOLEGAL ABSTRACTS

Naturopathy: Practitioner as Physician and Surgeon.—The plaintiff sought a judgment declaring (1) that he was entitled to practice naturopathy without obtaining a license to practice medicine and surgery and (2) that the Idaho medical practice act was unconstitutional. From a judgment denying the relief sought, the plaintiff appealed to the Supreme Court of Idaho.

The plaintiff, a graduate naturopath, testified that he performed minor surgery; that he administered colloidal sulphur, antibiotics such as Hydrangea, astringents, and other botanical preparations; and that he diagnosed by means of x-ray.

The statutes of Idaho require that no one can practice medicine or surgery without a license, and the practice of medicine and surgery is defined as including diagnosis and treatment of disease, prescription of the use of drugs and other cures or palliatives, and performance of operations. Naturopathy was alleged to be a system of drugless healing, separate and distinct from any other healing method.

The Supreme Court held that, whatever the plaintiff might call himself, his acts constitute the practice of medicine. It held that the administration or prescription of colloidal sulphur and Hydrangea and other antibiotics constitutes the prescription of "drugs." It held that the fact that the surgery performed by the plaintiff was described as "minor" was immaterial because the statute makes no distinction between major and minor surgery, and any surgery is therefore included in the statutory definition. It held that x-ray diagnosis is within the practice of medicine and surgery. The Supreme Court also rejected the plaintiff's contention that the medical practice act was unconstitutional. It is well settled, said the court, that statutes requiring professional persons to be reasonably qualified for their work and to possess licenses do not offend the constitution. If the plaintiff wants to practice in the manner in which he has been practicing, concluded the court, he must procure a license as a physician and surgeon.

The judgment of the trial court in favor of the state board of medicine was accordingly affirmed. *Smith v. State Board of Medicine, 259 P. (2d) 1033 (Idaho, 1953).*

Malpractice: Necessity for Expert Testimony.—The plaintiff sued the defendant physicians, defendant hospital, and defendant nurse for injuries allegedly caused by their negligence. From a judgment in favor of the defendants, the plaintiff appealed to the Supreme Court of Washington.

The plaintiff, an 80-year-old widow, suffered a slight stroke that left the left side of her face paralyzed, although she retained complete control over the rest of her body. One of the defendant physicians had the plaintiff admitted to the defendant hospital and gave instructions that she was to be given intravenous injections of glucose and saline solution, and specified doses of 2 grains of sodium luminal. The plaintiff was wakened at 6 a. m. the following day by the defendant nurse, who left a wash basin on a stand on the right side of the plaintiff's bed and told her to wash herself. The nurse then left the room. The plaintiff sat up and swung her legs over the edge of the bed, where she sat for a few seconds. Then, as she reached for the basin, she slipped from the bed, fell to the floor, and sustained an intertrochanteric fracture of the left hip. The plaintiff contended that there were three distinct acts of negligence that contributed to her injury: (1) the defendant physician's failure to instruct hospital employees to install bedrails on plaintiff's bed, (2) the hospital's failure to install bedrails, and (3) the defendant nurse's action in telling the plaintiff to wash herself and then leaving her unattended.

The Supreme Court stated that ordinarily a malpractice case against a nurse or doctor cannot be maintained unless there is expert medical testimony to the effect that the defendant either failed to do an act that the ordinary standard of practice in the community would call for or did an act that the same standard of practice would forbid. The only exception to this rule, said the court, would be in a case where the negligent conduct was so apparent that a layman could recognize it. In the instant case, the plaintiff introduced no expert medical testimony as to the ordinary standard of practice in the community. The Supreme Court was therefore unwilling to find that any of the three acts on which plaintiff relied as showing negligence were so apparently negligent in character that laymen could infer that they constituted departures from the ordinary standard of practice.

Accordingly, the Supreme Court affirmed the judgment of the trial court in favor of the defendants. *Cochran v. Harrison Memorial Hospital, 254 P. (2d) 752 (Wash., 1953).*

MEDICAL FILM REVIEWS

Therapy Influencing the Autonomic Nervous System: 16 mm., color, sound, showing time 19 minutes. Produced in 1952 by the Jam Handy Organization, Detroit, for and procurable on loan from G. D. Searle & Co., P. O. Box 5110, Chicago 80.

The film reviews first the anatomy of the autonomic nervous system, including its sympathetic and parasympathetic subdivisions. After this, the normal and disturbed physiology is discussed, and the importance of imbalance between these two subdivisions is emphasized. Discussion of this imbalance is principally confined to its influence on the gastrointestinal system, not only because of limitations of time in the presentation but also because of the many common disease conditions that are referable to this system and that are associated with such an imbalance. With the anatomy and physiology as a background, the actions of the pertinent classes of drugs, with the principal individual representatives of each class, are presented and discussed. After the complex anatomy is briefly reviewed, the speaker comes to the point of the film, which is that overactivity of the whole parasympathetic nervous system results in ulcer distress that can be ameliorated with adequate and continued dosage of Banthine. Unfortunately, the section of the film dealing with the pharmacology of drugs affecting the autonomic nervous system is too hurried to allow the proper appreciation; however, a beautifully illustrated booklet reviewing highlights of the film is available. As teaching material for medical students, the film could profitably be used as a summarizing review at the end of the course work in autonomic pharmacology. It will also be of interest to surgeons, ophthalmologists, neurologists, psychiatrists, and internists as well as to general practitioners because of its general interest.

The Nose: Structure and Function: 16 mm., color, sound, showing time 9 minutes. Collaborator: John J. Ballenger, M.D., Northwestern University Medical School. Produced in 1954 by and procurable on loan or purchase from Encylopaedia Britannica Films, 1150 Wilmette Ave., Wilmette, Ill.

In this film the nose is described as the principal instrument that adapts the air of the atmosphere to the air of the breathing organs. Following the air from the nostrils upward on a three-dimensional model, the film first stops at the upper turbinal and discusses the seat of olfaction in the nose. In an animation sequence, the olfactory sensorium of the human nose is compared with that of many animals, and the sequence explains how smell is carried to the brain. A series of photomicrographs shows the work of the cilia that move constantly to carry the mucous blanket from the nose down and from the lungs up to the throat. A series of experiments demonstrates the influence of chilling upon the speed of travel of the mucous blanket. The film also explains some impediments to breathing through the nose, such as adenoids, infected tonsils, infected sinuses, polyps, and improper sleeping habits. The pictures showing ciliary movement are among the most important and valuable of the film but are not used to best advantage. For instance, the first view of the nasal and oral cavities shows a flickering effect that extends over the surface of the tongue and the interior of the mouth, which would be quite misleading to the student. The statement about

the septum is not clear because the structure is snatched away from the model too abruptly for orientation. There is also a confusion of different scales. Since the film itself shows tracings on the centigrade scale, the narrator takes the occasion to use this scale. The animation and narration are very well done. This film contains a wealth of instructive, attractive material and should be useful in teaching high school students some elements of nasal anatomy and physiology.

The Antibiotics and Terramycin: 16 mm., color, sound, showing time 20 minutes. Produced in 1952 by Churchill Wexler Productions, Los Angeles for and procurable on loan from Chas. Pfizer & Co., Inc., 11 Bartlett St., Brooklyn 6, N. Y.

This film reviews, in general, the factors that lead to enhancement of the natural resources of the host and shows how these factors may be related to the host's struggle against invading parasites for existence and survival of the fittest among the lower forms of plant and animal life. The sequence makes extensive use of animated cartoon sequences in order to show diagrammatically the interrelationships of the antibacterial spectrums of the various antibiotics. Occasionally, the correlation between the symbolic presentation of resistance factors and the sound sequence becomes confusing, but otherwise the use of animated cartoons presents a new and colorful innovation in the discussion of host resistance and parasitic virulence. This is a sober and professional presentation of the facts of antibiotic therapy, leaning chiefly on oxytetracycline (Terramycin). It is scientifically accurate and is a direct presentation of the weaknesses as well as the strengths of the product; however, it suffers from the fact that it leans entirely on a pictorial and imaginative representation of factors such as disease attacking resistance of the host, and it does not use charts but depends entirely on the narration to present outstanding salient points. It is suitable for showing to all students in the health sciences, including those physicians who are in need of refresher courses on antibiotics.

THE LEISURE CORNER

COIN COLLECTING

Ever since the first manufacture of coins more than 27 centuries ago, mankind has engaged in the pursuit of this commodity both as a means of economic survival and as an enjoyable hobby. Fortunately, coin collecting is the sort of hobby that can be practiced without the resources of a King Midas. Although some coin collectors are wealthy and a number of coin collections have a lofty monetary tag placed on their value, the vast majority of numismatists—an appellation, incidentally, that coin collectors like—are persons of moderate means. Today, even the lowly penny attains considerable stature when it becomes an integral part of a completed coin collection. As a rule, however, most numismatists build their collections over a prolonged period of time, occasionally by means of small individual purchases, sometimes as a result of diligence and enthusiasm, and sometimes as a result of gifts. In any case, activities are usually confined to coins found in every-day circulation.

Coin collecting is a hobby with as much appeal for the sons and daughters of physicians as for their parents. Probably the easiest way to begin a coin collection is to start out with the common, garden-variety Lincoln cent and attempt to collect all the dates and mint-marks associated with this particular coin. The Lincoln cent was designed by Victor D. Brenner in 1909 to replace the Indian-head cent. The mint-mark—that is, the small "D" or "S" that appears under the date—signifies the coin was minted either at Denver or San Francisco. The Philadelphia mint has not used mint identifications on coins, with the exception of a few Jefferson nickels.

When Brenner designed the Lincoln cent he included his initials V. D. B. on the reverse side of the coin just above the rim. Although the initials were quite small, their appearance raised a minor storm, and so they were removed. A small number of Lincoln pennies bearing the V. D. B. initials were minted at San Francisco, and these today are more valuable than coins of similar vintage without the initials. Collectors generally attempt to obtain the 1909 series with dates and mint-marks running consecutively, for example—1909 Indian head, 1909 S Indian head, 1909 Lincoln head, 1909 S V. D. B. Lincoln head, 1909 S Lincoln head.

The mere accumulation of consecutive dates and mint-marks characterizing a series of coins does not necessarily terminate a search for Lincoln cents or other types of coins. The reason for this is that the value of a coin is determined by two factors, rarity and condition. Coins are considered rare when a small number of coins have been issued or when few of an issue survive. Coins are scarce when they are difficult to obtain on account of being held by various collectors, despite the existence of a number of specimens sufficient to supply the demand. Collectors regard coins as desirable when they possess exceptional qualities, such as fine workmanship, beauty, excellence of preservation, and historical importance. A desirable coin may be either rare, scarce, or common. Coins in the last category can be obtained readily. The term common does not imply that the coins in question are cheap or undesirable. Old coins are not necessarily the most valuable, for mankind has buried its treasures for centuries. Even ancient Greek and Roman coins do not come under the classification "rara avis," since great numbers of them have been excavated and thrown on the market.

"Proof" coins are the most highly prized by numismatists; they have mirror-like surfaces and are kept under glass or in special binders because the condition of a coin is of utmost importance in determining its price in the dealer's market. Each year proof coins are minted in Philadelphia and are then sold to collectors at a premium. A proof set consists of one coin of each denomination totaling 91 cents in face value, and sells for $2.10. The 1936 proof set now sells for nearly $100.00. Obviously, an annual investment of $2.10 in the current proof set pays handsome dividends both from a monetary standpoint and from the satisfying point of view of ownership of attractive coins.

Next to proof coins, uncirculated coins in perfect condition are the most valuable. Uncirculated coins possessing mint lustre are worth more than worn coins, and every collector strives to obtain a set in as fine condition as possible. In this connection, the search of a numismatist always takes on two aspects: locating a coin for each date and mint-mark, and securing each coin in the best possible condition. Other categories to describe the condition of coins include the following terms: "extremely fine" coins, which have had very little handling; "very fine" coins, which show some inconsequential signs of wear but which are still desirable; "very good" coins, which show definite signs of wear; and "good" coins, which are worn but whose lettering and design are still clear. It will be noticed, parenthetically, that the word "poor" is never associated with money.

The increase in value of commemorative half dollars, which are among the most popular of all series with American coin collectors, has been striking. Commemorative half dollars are authorized by an act of Congress and are sold by designated authorities at a premium. Since they are sold primarily to collectors, commemorative half dollars seldom appear in circulation. Very few persons are aware of the existence of these coins, which commemorate American historical events. The interest they generate in numismatic circles is considerable, and the coins are always eagerly sought after.

As in the case of American coins, foreign coins also can be collected with a minimum of expense. In cities large enough to have banks that engage in extensive foreign exchange, foreign coins can be purchased at face value. Desirable minor foreign coins can be purchased for as little as 10 cents. In general, it does not take the novitiate numismatist long to discover that some coins are difficult to locate. The search for desirable additions to one's coin collection may lead to correspondence with collectors all over the world. Numismatic research will lead to investigations in the fields of archeology, history, politics, economics, and even into medicine—if the physician numismatist decides to specialize in medical coins. Indeed, this hobby, like reading, "maketh a full man."

MEDICAL LITERATURE ABSTRACTS

INTERNAL MEDICINE

Hypertrophy of the Heart: Electrocardiographic Distinction Between Physiologic and Pathologic Enlargement. T. Winsor and G. Beckner. California Med. **82:**151-158 (March) 1955 [San Francisco].

Electrocardiograms of 40 marathon runners were examined to study hypertrophy of the heart due to prolonged physical exertion and to differentiate this from hypertrophy due to various disease states (studied in 40 patients), especially essential hypertension, aortic valvular disease, and coarctation of the aorta. Forty normal persons were studied as controls. The electrocardiogram of the marathon runner is characterized by a slow cardiac rate, high voltage of the QRS complexes and T waves in the standard and/or precordial leads with normal R/T ratios. There is moderate enlargement of the heart as observed on teleroentgenography. These findings are characteristic of physiological hypertrophy of the heart and should be suspected among patients with a history of athletic activities calling for endurance. Immediately after running, all waves show an increased voltage and the heart size decreases. The concept of the secondary T wave in hypertension as a part of the left ventricular strain pattern was challenged in these experiments by the observation that the increased voltage of the R waves in lead V_5 and other leads seen in marathon runners and in certain patients with hypertension, aortic stenosis, aortic insufficiency, and coarctation of the aorta were not necessarily associated with typical discordant S-T segments and T waves. There was a higher incidence of dyspnea, angina pectoris, and cardiac enlargement among hypertensive patients with discordant T waves than among hypertensives without these changes. It is felt that the discordant waves are a primary phenomenon and are not merely secondary to the increased area of the R waves. Primary T waves suggest myocardial disease, possibly anoxia of the subendocardium.

On Some Features of Rheumatic Fever and Rheumatic Heart Disease as Seen in the National Cardiological Institute of Mexico. M. Salazar-Mallén and J. Rulfo. Ann. Int. Med. **42:**607-618 (March) 1955 [Lancaster, Pa.].

Of 26,091 patients admitted to the National Cardiological Institute of Mexico between 1944 and 1950, 5,331 had rheumatic fever and rheumatic heart disease and 11,012 were cardiac patients without rheumatism. Rheumatic heart disease is widespread in the Mexican republic, and its prevalence ratio among the various forms of heart disease is comparable to that observed in temperate climates in such countries as England and the United States. The presence of a large Indian component in the Mexican population is not considered significant in relation to rheumatic predisposition. If there are more rheumatics among the economically needy classes (having a greater indigenous component), the phenomenon should be attributed to the economic-social factor and not to the racial (genetic) traits. Of the 5,331 rheumatic patients, 3,480 (65.27%) were women and 1,851 (34.73%) were men. This is substantial proof that the female sex is more susceptible to rheumatism; it was noted during the prepuberal age as well as during the second and third decades of female life, hence suggesting a greater hypophysiocortical instability in women, particularly during their more active genital period. Climate has a decisive influence on the occurrence of rheumatism. When the variables constituted by the different genetic or economic factors are discarded, the very low rheumatic morbidity in tropical-rainy climates is noted, whereas it is very high in temperate-rainy zones, with a medium position in dry climates. Rheumatism has decreased since 1947. The cause of this phenomenon can be attributed to improved living conditions. Rheumatic heart disease still produces one-third of the cases of diseases of the heart in Mexico.

Prognosis of Tuberculous Pericarditis. Y. Bouvrain and Mrs. S. Pages-Dartevelle. Semaine hôp. Paris **31:**831-837 (March 6) 1955 (In French) [Paris, France].

Ten years ago, the mortality in cases of tuberculous pericarditis was about 80%, but this figure has been almost exactly reversed by modern therapy. The authors saw 28 patients with this disease, of whom 5 were women and 23 were men. The preponderance of men having tuberculous pericarditis has been reported in the literature. Of the 28 patients, 10 were given no treatment, and 6 of these died; of the 18 treated by antibiotic therapy, pericardiectomy, or both, 3 died, 11 were cured, 3 are still under treatment, and one was lost to follow-up. The patients ranged in age from 2 to 59 years. All four of the ones over 40 years of age died; it seems that advanced age is a poor prognostic sign. All of the nine patients who died were men. The slow, progressive onset of the disease is a less favorable sign than the acute onset with dyspnea, fever, and pain in the chest. Throughout the patient's illness his electrocardiogram must be watched; he cannot be considered cured until it has returned to normal. The presence of tubercle bacilli in the pericardiac fluid is a bad sign. During the primary or secondary period of the disease, latent pericarditis of the primary infection has a good prognosis, whereas subacute epicardiopericarditis and caseous pericarditis are always fatal unless treated early; between these two extremes is pericarditis with copious serofibrinous effusion or hemorrhagic effusion, sometimes associated with polyseritis. The prognosis is unfavorable in pericarditis of a reinfection because of the tendency to diffusion of the lesions. To obtain a complete cure with antibiotic therapy, three conditions are necessary: the treatment must be instituted early in the course of the disease, the dosage must be similar to that used in the treatment of tuberculous meningitis (combined therapy with streptomycin, *p*-aminosalicylic acid, and isoniazid is recommended), and, lastly, therapy should be prolonged for three months at least and probably longer in most cases. In many instances, the evolution of the disease toward constrictive pericarditis cannot be halted, and, accordingly, pericardiectomy should be performed promptly.

Hiccups: Pathogenesis and Therapy. C. Campana. Policlinico (sez. prat.) **62:**169-175 (Feb. 7) 1955 (In Italian) [Rome, Italy].

The etiology of intractable hiccups is reviewed and the treatment is discussed. Empirical methods, such as digital compression of the eyeballs to the point of mild discomfort for 30 to 40 seconds, pressure on the carotid sinus or the upper lip, traction of the tongue, sudden fright, and induction of vomiting by pharyngeal irritation, have often proved helpful. If these methods fail, since dilatation and irritation of the stomach are common causative factors, gastric lavage or permanent gastric aspiration should be the next step. Intravenous injection of atropine or bromides as well as the administration of ganglioplegics, mainly Largactil, chlorpromazine [10-(γ-dimethylaminopropyl)-2-chlorophenothiazine hydrochloride], to depress the central nervous system is also useful. This ganglioplegic has an efficacious preventive action against hiccups that arise during anesthesia or surgical intervention. Inhalation of carbon dioxide through a long rubber tube is also effective in stopping hiccups

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The place of publication of the periodicals appears in brackets preceding each abstract.

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because it stimulates the respiratory center in the brain. When all these measures fail to bring relief, the most radical but most effective treatment is the temporary blocking of one or both phrenic nerves or of the third, fourth, fifth cervical roots with injection of atropine by the paravertebral approach. If relief is not obtained, crushing of one or both phrenic nerves becomes necessary.

Observations on the Pathogenicity of Isoniazid-Resistant Mutants of Tubercle Bacilli for Tuberculous Patients. R. Oestreicher, S. H. Dressler, W. F. Russell Jr. and others. Am. Rev. Tuberc. **71**:390-405 (March) 1955 [New York].

The authors felt that any attenuation of isoniazid-resistant mutants for human beings should manifest itself primarily in a significantly decreased incidence of progressive bronchogenic spreads of tuberculous infection in patients with pulmonary tuberculosis who are under treatment with isoniazid. The 45 patients selected for this study were derived from the adult medical service and the follow-up department of the National Jewish Hospital during the past two and a half years. The prolonged administration of isoniazid had been preceded by treatment with either streptomycin, *p*-aminosalicylic acid, or viomycin, or combinations of these agents. The 45 patients were selected from a much larger group, in many of whom tubercle bacilli had disappeared from the sputum. The 45 patients satisfied the following criteria. 1. Tubercle bacilli were demonstrable in the sputum, both by smear and culture, and a large number of the bacilli were resistant to isoniazid. 2. They received isoniazid alone in daily doses of 4 to 16 mg. per kilogram of body weight for periods of 6 to 25 months (average of one year per patient) after completing preliminary combined drug therapy. Nearly all patients received thiamine (110 mg. per day by mouth) and pyridoxine (25 to 100 mg. per day by mouth) during the period of observation. The fact that no new lesions of progressive tuberculous disease developed in these patients, with one possible exception, is interpreted as indirect evidence that the pathogenic potentialities of most isoniazid-resistant mutants of typical mammalian-type tubercle bacilli are strictly limited for most tuberculous patients.

The Detection of Tubercle Bacilli in Mouth Wash Specimens by the Use of Membrane Filter Cultures. D. E. Rogers, G. M. Cooke and C. E. Meyers. Am. Rev. Tuberc. **71**:371-381 (March) 1955 [New York].

Rogers and associates say that previous work in their laboratory indicated that micro-organisms in the lower respiratory tract can be isolated from mouth wash specimens. The recent development of a new bacteriological filter, the membrane filter, suggested that membrane filter cultures of mouth wash gargle specimens might provide a simple method for the isolation of tubercle bacilli. They describe the growth characteristics of Mycobacterium tuberculosis on membrane filter surfaces and the recovery of tubercle bacilli from patients with pulmonary tuberculosis by the mouth wash–membrane filter technique. The Hydrosol assay "Millipore filters," which are a modification of the molecular filter of Goetz, were used in these studies. The filter membrane consists of a homogeneous, screen-like, paper-thin cellulose ester film, which is devoid of fibrous structure and which has a high and uniform porosity of approximately 80% of the filter substance. The large number of pores (5×10^7 per square centimeter) permits the quantitative retention of bacteria at flow rates of 50 to 100 ml. of fluid per minute against differential pressures of 70 mm. Hg. To facilitate quantitative counts, a grid imprinted on the surface of the filter disk divides the disk surface so that each square represents one-hundredth of the effective filtering surface. Bacterial cells impinged upon the membrane filter surface can be subsequently cultured by diffusion of nutrient when the back surface of the filter is placed in wetting contact with liquid or moist solid nutrient. Mouth wash specimens were collected in the morning from patients with suspected or proved pulmonary tuberculosis. Twenty-four hour sputum cultures or gastric aspirate cultures were used to check the reliability of membrane filter cultures. The studies made on 134 patients in a veterans administration hospital revealed that tubercle bacilli can be collected and quantitatively cultured on the surface of Millipore filters. Utilizing mouth wash specimens, positive cultures were obtained from the majority of patients with sputum cultures positive for tubercle bacilli. An insufficient number of patients in whom sputum cultures were negative and gastric aspirate cultures positive for tubercle bacilli have been studied to make possible any statement regarding the sensitivity of the procedure under these circumstances. Colony growth was significantly slower on the membrane filter surface than it was on the surface of routine plating mediums. Recent information from Goetz suggests that this difficulty may be prevented by increasing the strength of medium constituents to overcome the diluting effect of atmospheric water absorption by the exposed membrane filter surface. Because of the delay in diagnosis inherent in the slow cultural growth of tubercle bacilli, the use of the membrane filter as a collecting device, and subsequent direct staining of tubercle bacilli impinged on the filter, is under study. The ability of membrane filters to transmit large quantities of fluid at high rates of speed permits the concentration of small numbers of micro-organisms contained in large volumes. Thus, membrane filter cultures may prove of value in clinical situations where bacteriological diagnosis is at present difficult.

Effect of Somatotropic Hormone on Decubitus Ulcers and Neurotrophic Disorders. A. Ravina, M. Pestel and J.-C. Dayras. Presse méd. **63**:305-308 (March 2) 1955 (In French) [Paris, France].

The histories of six patients are presented; they were treated with injections of hypophysial growth hormone for ulcerative lesions complicating various illnesses. Most of the patients were malnourished, cachectic, or in general ill-health. The results of this treatment were good or excellent in these cases and in others the authors have seen. The technique of treatment to be used is intramuscular injection of 100 Evans units of a purified somatotropin preparation every two days until 10 injections have been given. Improvement should be noticeable on the eighth day after therapy is begun. This program may have to be followed by a series of five injections administered in the same manner. The benefit obtained consists not merely of cicatrization, but actually of tissue regeneration. Amelioration of the patient's general condition and well-being occurs as well. Glycosuria is not a side-effect. In two of the patients of this series, a decrease in the circulating proteins was noted. In one instance a progressive decrease in blood urea concentration occurred. Electrophoretic studies showed a decrease in the albumin level and an increase in the globulin level in three patients, the alpha$_2$ and gamma globulins being first affected. A fall in the total protein level has also been seen in some cases. In conclusion, it can be said that the growth hormone has a definite effect on eschar healing, on neurotropic disturbances, on gangrene, and on necrotic processes occurring in extremely ill patients whose lives are threatened by these complications. Laboratory studies suggest that blood proteins are mobilized to the zone of regeneration under the influence of the hormone. The work done so far is merely introductory and needs to be supported by larger numbers of therapeutic trials and more complete studies on the circulating proteins.

The Pathogenesis and Prognosis of Tuberculous Pleurisy with Effusion. J. J. Waring. Tubercle **36**:59-62 (Feb.) 1955 [London, England].

According to Waring, acute serofibrinous pleurisy with effusion is in most circumstances tuberculous in origin. It is a dominant local manifestation of a disseminated infection if not a disseminated disease. It is closely associated with primary infection and is therefore one of the early clinical manifestations of tuberculous disease. In many cases, acute serofibrinous pleurisy is not a benign condition nor just a localized infectious process, since it is frequently associated with signs and symptoms

of extrathoracic tuberculosis and may be followed by remote recurrences of active tuberculosis. It would appear that this type of pleural effusion might arise in the following ways: (1) by primary blood or lymphatic vascular transport from a primary complex and localization of bacilli in the pleura, (2) by discharge of living bacilli into the pleural space, (3) by discharge of caseous material with or without living and dead bacilli from a subpleural tubercle into the pleural space, and (4) by progression of infection from a mediastinal tuberculous adenitis into the pleural space. There is general agreement that this type of pleural effusion signifies infection of the pleural space in a person with hypersensitivity to tuberculosis. Immediate and remote prognosis of pleural effusion is related to the underlying general and focal pulmonary lesions but also to the method of treatment. Pleural effusion should be treated vigorously with adequate rest and chemotherapy.

Functional Abnormalities of Industrial Pulmonary Fibrosis. G. W. Wright. A. M. A. Arch. Ind. Health **11**:196-203 (March) 1955 [Chicago].

Both crystalline silica in finely divided form and air-borne asbestos fiber when introduced into the lung can produce fibrosis. Although the clinical manifestations of silicosis and asbestosis are in many, though not all, respects similar, the abnormalities of function resulting from the two diseases in the respiratory apparatus are different. It is the experience of all investigators that the simple discrete nodular phase of silicosis is rarely complicated by recognizable physiological alterations of the cardiorespiratory apparatus. In the conglomerate form of the disease, however, the classical evidences of diffuse obstructive emphysema are relatively common. It is of practical interest that in all stages of silicosis the severity of impairment of respiratory function bears only the grossest correlation with the extent of the disease displayed in the roentgenogram. If the physiological alterations are slight, there is little impairment of the ability to carry out physical exertion. If there is a pronounced reduction in breathing capacity, the degree by which such a person's ability for physical exertion is limited may be equally great. The breathlessness during exertion that restricts the physical work capacity of the patient with conglomerate silicosis is primarily caused by loss of breathing power. Present-day techniques permit one to measure the physiological alterations with a reliable degree of accuracy. A study of 57 men who had experienced varying degrees of exposure to air-borne asbestos fiber showed that in the typical person with asbestosis there is little, and frequently no, impairment of ability to ventilate the lungs as measured by the maximum breathing capacity. There is likely to be, however, a measurable restriction of the degree to which the lung can be expanded, as evidenced by a slight to moderate reduction in total volume. The primary or chief abnormality exhibited by the patient with asbestosis is impaired oxygen transfer to the blood rather than impaired breathing ability and ventilation. Small areas of emphysema occur in the tissues of the lung of the typical patient with asbestosis, but the massive emphysematous involvement of the lung, which is so commonly observed in conglomerate silicosis, does not appear to be present as a rule in even the severe cases of asbestosis. In regard to the correlation between x-ray abnormality and physiological abnormality in asbestosis, three situations may be observed: (1) physiological abnormality without any definite roentgenologic abnormality; (2) roentgenologic abnormality and physiological abnormality; and (3) roentgenologic abnormality without any physiological abnormality. While the physiological abnormalities in silicosis and asbestosis are distinctly different in the early stages of the two diseases, in the terminal stage the distinction may not be entirely clear and may lead to confusion. A further difficulty in diagnosis resides in the fact that many workers with obvious pulmonary abnormality have had exposure both to silica and asbestos, and the diseases may coexist. Both diseases may be roentgenologically manifest but without recognizable physiological impairment. An enormous respiratory reserve permits extensive tissue injury and damage with little or no loss of capacity for physical work.

SURGERY

Relation of Gallstone Disease to Angina Pectoris. I. S. Ravdin, T. Fitz-Hugh Jr., C. C. Wolferth and others. A. M. A. Arch. Surg. **70**:333-342 (March) 1955 [Chicago].

Pain regarded as anginal in patients with gallstone disease is often unrelated to effort and most frequently occurs at night while the patient is in bed. It frequently follows ingestion of food known to be poorly tolerated. Thus the diagnosis of angina pectoris must always be scrutinized carefully in patients with gallbladder disease, even when the diagnosis of coronary disease can be established and when the pain can be ameliorated by glyceryl trinitrate. Operation upon the biliary tract should not be undertaken solely for the purpose of relieving anginal pain unless evidence suggests a relationship between the biliary tract disease and the anginal seizures. The diagnosis of the anginal syndrome, even when established beyond reasonable doubt, should not be regarded as a contraindication to an operation upon a diseased biliary tract unless the heart disease is so far advanced that the operative hazard outweighs the chance of benefit. In a patient with symptoms of gallbladder disease and auricular fibrillation, an exploratory operation revealed a large distended gallbladder that was partly gangrenous and contained several hundred stones. Cholecystectomy was performed. Aside from one brief bout of auricular fibrillation on the first postoperative day, normal sinus rhythm was observed during the remaining hospital stay. This patient has had no further cardiac or digestive symptoms during the eight years since his cholecystectomy. Other case histories illustrate the relationship between gallstone disease and coronary infarction, or how serious heart disease is made worse by gallstone disease. During the period from 1922 to 1947, the authors operated on a total of 2,100 patients with gallstone disease. Of these, 260 had some type of cardiac disease. This represents 12.4% of the entire group. Ten of the 260 patients died while in the hospital, a mortality of 3.8%. All of these deaths occurred in the patients operated on before 1944. No deaths occurred in the patients operated on between 1944 and 1947, that is, with improvements in preoperative and postoperative care, and with more careful control by competent internists and cardiologists, the mortality has continually been reduced. The best results will be obtained only through the closest cooperation between internist and surgeon.

A Review of Burned Hands in Children. D. W. Williams. Brit. J. Plast. Surg. **7**:313-319 (Jan.) 1955 [Edinburgh, Scotland].

Williams reviewed 100 cases of burns involving hands of children under 16 years of age. Thirty-four children sustained burns of both hands. Direct contact with heating appliances caused the burns in 67. Partial thickness loss, or second degree burns, were observed in 40 hands of 32 children, and full-thickness loss or third degree burns were observed in 94 hands of 70 children. No first degree burns are included. Grafting was done in only two of the second degree burns. Contractures developed in 15 of the second degree burns, all of which were on the volar aspect. Primary grafting was done in 47 of the 94 hands with third degree burns. Contracture deformities developed in 33 of these 47 hands (29 on the volar and 4 on dorsal surface). Forty-seven hands with third degree burns were treated by nonsurgical methods (tulle gras, chemotherapeutic powders, etc.), and contracture deformities developed in 35 (30 after volar and 5 after dorsal aspect burns). The author suggests that if a burned area is not epithelialized within the first 10 days, grafting should not be delayed. Primary grafting seems to have no influence on the incidence of contracture deformities. In view of the possibility of variation in rate of growth between grafted and normal skin and the fact that the majority of burns occur on the volar aspect of the hands, where the action of the flexors exerts a much greater pull than the extensors, the normal resting position of the child's hand will fail to exert "pull" on the graft and thereby contribute to the tendency of grafted skin to contract. Well-designed splints should be worn for at least six weeks, being removed only to allow cleansing of the hands. The author prefers the volar acrylic splint but feels that with proper application either the volar or dorsal acrylic splints will attain the object of minimizing the tendency of the grafted skin to contract. Chil-

dren with full-thickness burns should be followed up for at least three years, at intervals of six months. Ideally, the observations should be maintained until full growth of the child has been attained, for until such time there remains a danger of contraction of the scarred or grafted skin.

Clinical Evaluation of the Surgical Management of Combined Mitral and Aortic Stenosis. W. Likoff, D. Berkowitz, C. Denton and H. Goldberg. Am. Heart J. **49:**394-406 (March) 1955 [St. Louis].

The clinical results obtained by combined mitral and aortic commissurotomy in 74 patients with valvular heart disease divided into three groups according to the lesions present show that the combination of anatomic lesions and their physiological significance is the most important single factor relating to survival in combined commissurotomy. The mortality rate, which may be expected to be exceptionally low in uncomplicated mitral and aortic stenosis (zero in this series), rises sharply with the presence of additional lesions: thus one additional insignificant lesion raises the rate just beyond that of aortic commissurotomy for pure stenosis and to more than twice that of mitral commissurotomy. Two insignificant lesions increase the mortality to almost twice that of aortic commissurotomy and to more than four times that of mitral commissurotomy, and, when one or more additional major defects are present, one of every two patients fails to survive. Patients under 50 subjected to the combined operation run three times as great a risk as those in the same age group subjected to aortic or mitral commissurotomy alone. Follow-up of the 54 patients in this series who survived the operation showed that four died after their discharge from the hospital, three from congestive heart failure four or five months after the operation and one from subacute bacterial endocarditis. Congestive heart failure and the development of atrial fibrillation were the postoperative cardiac complications seen most frequently during the hospital stay. Nonfatal pulmonary complications occurred in 35 patients and miscellaneous complications—fever, jaundice, anemia, mental disturbances, impaired renal function, and drug reactions—were seen in 21. Improvement was noted in 34 patients; 4 were unchanged; and 3 were definitely worse. Fatigability, dyspnea, and angina were significantly decreased in the patients benefited by the operation. Improvement in peripheral edema, however, was limited. Changes in heart size, brachial artery tracings, and electrocardiographic patterns were generally less significant than the symptomatic changes and could not be correlated either with them or with one another. Evaluation of these results shows that patients with multivalvular heart disease are poorer operative risks than those with isolated lesions and that they offer less promise of functional recovery, especially after the occurrence of congestive heart failure. Combined commissurotomy, however, when not contraindicated, may lead to subjective and objective improvement not otherwise obtainable. The contraindications are the presence of additional significant lesions, with the possible exception of mitral insufficiency, which was without effect in these patients; the presence of congestive heart failure; a systolic pressure that is persistently below 100 mm. Hg in patients over 50; and acute rheumatic activity, subacute bacterial endocarditis, and associated major disease.

Studies in Mitral Stenosis: V. Evaluation of Immediate and Late Results on Fifty Patients, Operated upon Since 1950. G. Biorck, O. Axen, H. B. Wulff and others. Acta med. scandinav. **151:**19-40 (No. 1) 1955 (In English) [Stockholm, Sweden].

An evaluation is made of the results of mitral commissurotomy in 50 patients, together with an analysis of the factors contributing to the success or failure of these results. Twelve of the patients were men and 38 were women; the ages represented ranged from 8 to 55 years. Results were excellent in 24 patients, good in 10, and unsatisfactory in 8; 8 patients died. About half the group had minor complications or none at all, while the other half had major ones. In general, the patients who had major complications were also the ones who had a poor end-result. The most important common denominator of these two factors is the technical success of the operation with regard to the increase in area of the valve orifice. When operation is performed, it should be as radical as possible. The mortality rate, though decreasing since 1950, and the rate of postoperative complications warrant a search for the contributory factors. The inclusion of some patients with mitral regurgitation contributed to the incidence of complications but not to the mortality. Among the complications, disturbances of pulmonary function were more impressive than were cardiac disorders. The general state of the patient, however, seemed to be more important prognostically than most information derived from studies of the pulmonary vascular conditions, apart from the determination of pulmonary vascular resistance.

Bronchial Anastomosis and Bronchoplastic Procedures in the Interest of Preservation of Lung Tissue. D. L. Paulson and R. R. Shaw. J. Thoracic Surg. **29:**238-259 (March) 1955 [St. Louis].

Of 16 patients between the ages of 19 and 58 years in whom bronchial anastomosis and bronchoplastic procedures were used by the authors to restore bronchial continuity and preserve good lung tissue supplied by a bronchus with traumatic, inflammatory, or neoplastic lesions, two had traumatic bronchial occlusion, two traumatic bronchial rupture, three tuberculous bronchostenosis, two bronchial adenoma, and seven bronchogenic carcinoma. Healing of the involved bronchus and full expansion of the lung tissue was obtained with bronchial suture, bronchial anastomosis, and bronchoplastic procedures in the nine patients with traumatic bronchial occlusion and rupture, tuberculous bronchostenosis, and bronchial adenoma. These procedures should be considered in the surgical attack of any benign bronchial lesion to avoid unnecessary sacrifice of good lung tissue. Of the seven patients with bronchogenic carcinoma, bronchial anastomoses were utilized because of inadequate pulmonary reserve in three; deliberately for well-localized, small, centrally located lesions in three others; and to extend operability in one patient. Three patients died of their carcinoma within one year after the operation. The remaining four, in three of whom lobectomy combined with bronchial resection and anastomosis was done deliberately, are alive 1, 11, 12, and 18 months after the operation respectively. Although pneumonectomy is the ideal surgical method in most of the bronchogenic carcinomas, lobectomy combined with bronchial resection and anastomosis may be considered for the well-localized, small, centrally located lesions because of the lower operative mortality rate and the advantages resulting from the preservation of lung tissue. This procedure will permit wider excision of the bronchus in those patients in whom limited cardiac or respiratory reserve makes lobectomy imperative. After the authors' paper had been submitted for publication, the number of patients who underwent bronchoplastic procedures with resection for bronchogenic carcinoma increased to 12; 8 of the 12 patients have remained alive and well for varying periods up to 26 months after the operation.

Considerations on Traumatic Hernias of Diaphragm. C. Orecchia and F. Badellino. Minerva chir. **10:**15-22 (Jan. 15) 1955 (In Italian) [Turin, Italy].

Post-traumatic diaphragmatic hernias are more common than is generally believed. The symptoms—difficult respiration, heart palpitation, and pain in the abdomen and chest—vary in relation to the point of rupture, the herniated organs, and the time elapsed since the occurrence of the trauma. The diagnosis is based on the patient's clinical history and on roentgenograms of the chest and the digestive apparatus. Electrocardiograms can be valuable. The treatment of choice is a surgical intervention performed as soon as possible through the abdominal, thoracic, or thoracoabdominal approach. At the surgical clinic of the University of Turin the abdominal approach is preferred. If possible, plastic surgery of the diaphragm should be performed without the use of foreign substances. When this cannot be done, an inorganic, nonelectrolytic substance that is easy to sterilize, chemically inert, and permeable to the tissue fluids, pliable, unbreakable, resistant to the local strains and mainly the intra-abdominal pressure, nonirritating to the tissue, and easy to handle as well as economical should be used. At the

afore-mentioned clinic a tantalum mesh has been used during the last years, and it has given good results. This mesh is applied in a single or double layer on both surfaces of the diaphragm or only on the abdominal one, and its borders are sutured 1 to 3 cm. beyond the borders that were created by the rupture. The history of six patients with post-traumatic diaphragmatic hernia in whom a tantalum mesh was employed is reported, and the roentgenograms are reproduced. Follow-up made approximately six months to four years after the intervention indicated that the patients were well and were leading a normal life.

The Middle Lobe Syndrome and Its Relationship to Certain Aspects of Middle Lobe Disease. R. H. Adler, F. E. Mantz Jr. and P. F. Ware. J. Thoracic Surg. **29:**283-295 (March) 1955 [St. Louis].

Originally, the middle lobe syndrome was defined to denote enlarged peribronchial lymph nodes compressing the middle lobe bronchus with certain changes in the distal parenchyma. Diagnosis of middle lobe syndrome should not be made unless the following criteria have been met: (1) hilar or peribronchial lymphadenopathy, (2) bronchostenosis, and (3) certain variable changes in the distal parenchyma that depend on such factors as the nature and duration of the obstruction and the presence or absence of secondary infection in the obstructed distal lung. If infection does not supervene, an atelectatic middle lobe may be an incidental finding on survey chest roentgenograms. The more common course is that of repeated bouts of infection leading to persistent lymphadenopathy, further bronchial compression, and increased obstruction, resulting ultimately in gross bronchiectasis, chronic pneumonitis, fibrosis, and even lung abscess, bronchopleural fistula, and empyema. Special stress is laid on the diversified causation that may be present in contrast to a more constant symptomatology with cough, sputum, hemoptysis, and recurring pneumonitis. The concept so strongly held in the past of commonly associating the syndrome with tuberculosis must be abandoned. Five illustrative cases of middle lobe syndrome and closely related middle lobe disease are described in three men, aged 19, 22, and 26, respectively, a 75-year-old woman, and a 4-year-old girl. A middle lobectomy was performed in all the patients, and pathological examination of the removed lobes was carried out. Sarcoidosis and histoplasmosis were responsible for the production of the syndrome in the two older men and tuberculosis in the girl, while in the two remaining patients the cause was nonspecific. In general, treatment of the syndrome is essentially surgical. A careful history and thorough laboratory studies, including skin and cytological tests, may uncover the underlying cause. The chest roentgenogram may vary from the characteristic appearance of a completely atelectatic middle lobe to that of acute pneumonitis. The right lateral projection may reveal changes easily missed on the anteroposterior roentgen picture. The presence of hilar lymphadenopathy, especially with calcification, should be noted. Bronchoscopy not only helps to evaluate stenosis and the origin of secretions of blood but also permits a check for neoplasm, foreign body, perforating lymph nodes, and broncholiths. A bronchogram often shows obstruction in the middle lobe bronchus, beyond the vision of the bronchoscopist.

Thromboendarterectomy, a Clinical Appraisal. E. J. Wylie and R. Gardener. Surgery **37:**415-426 (March) 1955 [St. Louis].

Thromboendarterectomy, which has been recommended by dos Santos of Lisbon for certain types of peripheral arteriosclerosis, is based upon the finding that the thrombosis of arteriosclerosis often involves a localized segment of a major artery and that it is technically possible to restore normal arterial flow through the occluded arterial segment by surgical resection of the diseased intima. Wylie and Gardener of the University of California School of Medicine during the past three years made a study of peripheral arteriosclerosis, with particular respect to the possibilities of thromboendoarterectomy in its treatment. In 185 of 187 patients who presented complaints secondary to arteriosclerosis of the peripheral arteries, the sites of significant arterial disease involved vessels supplying the lower extremities. Aortograms were performed upon 132 patients to determine the levels and extent of arterial occlusion. Thromboendarterectomy was attempted in 72 patients, but unexpected findings in the involved arteries made thromboendarterectomy impossible in 10 patients, and the complete operation was performed in 62. The criteria for selection for operation included: (1) the presence of disabling symptoms due to arterial occlusive disease; (2) the radiographic demonstration of segmental occlusion of a major artery; and (3) a relatively good physical status. The contraindications to operation were: (1) debility of advanced age; (2) the presence of serious concomitant disease in other organ systems; and (3) the arteriographic demonstration of the diffuse form of arteriosclerosis. There were 43 patients in whom the diseased arterial segment was completely occluded; stenosis was present in 19 patients. The common complaint of all the patients was the development of incapacitating muscular symptoms on exercise. The surgical techniques employed for thromboendarterectomy were based upon the method of dos Santos and modified to overcome some of the complications encountered early in the series. To overcome the tendency for early thrombosis in the operative area, systemic heparinization is obtained by the intravenous injection of sufficient concentrated heparin to raise the clotting time to 30 minutes. This usually requires from 15 to 30 mg. of heparin. The injection is made before the clamps are applied, and adequate time is allowed for the full anticoagulant effect. Lumbar sympathectomy has been combined with thromboendarterectomy in the last 38 operations, either as a preliminary operation in patients with femoral thrombosis or simultaneously when the abdomen is open for aortal or iliac thromboendarterectomy. Arterial thrombosis, either as a result of operation or due to the progression of arteriosclerotic changes in other arteries, is a constant hazard. It is also believed that the more rapid the blood flow through the operative segment, the less the likelihood of local thrombosis. The mortality rate for the entire series was 12.9%. In two patients, death was due to cerebrovascular thrombosis and in two to renal failure. Hemorrhage caused the death of two patients, in one from disruption of the aorta suture line on the 31st day, and in the other on the first day because of bleeding from an undetermined intra-abdominal site. Ligation of the inferior mesenteric artery leading to necrosis of the descending colon and subsequent resection of the colon was followed by death in shock in 1 patient. An unconfirmed coronary thrombosis contributed to one fatality. Arterial thrombosis due to operation occurred in seven patients, occlusion at the operative site in four and in the distal arterial tree in three. Gangrene requiring leg amputation occurred in four patients. A normal or improved arterial circulation was restored in 47 patients, but in 2 of them thrombosis recurred a year after operation. Improved operative techniques led to a gradual reduction in mortality and in the incidence of complications.

The Treatment of Pancreatic Cysts by Internal Drainage. I. S. R. Sinclair. Brit. J. Surg. **42:**367-377 (Jan.) 1955 [Bristol, England].

Sinclair presents three cases in which anastomosis of a pancreatic cyst to the stomach resulted in lasting clinical cure. Two of the patients, prior to being cured by cystogastrostomy, had been subjected to other operations, including marsupialization. On the basis of the reported cases and of a review of the literature the author concludes that anastomosis to the stomach is the most suitable method and that no valid objections to this site of anastomosis have been put forward on either physiological or clinical grounds. Implantation of a fistulous track into the alimentary canal is not a satisfactory method of treatment, and in all instances the cyst itself should be directly anastomosed to the stomach. The various techniques are discussed. Owing to the frequency of prolonged discharge after external drainage of a pancreatic cyst, it is suggested that cystogastrostomy should be the primary line of treatment when the ideal of total excision is deemed unduly hazardous. Both pseudocysts and true cysts are equally amenable to this method of treatment. Irremovable neoplastic cysts are considered to be an absolute contraindication to external drainage but may be successfully palliated by internal anastomosis.

NEUROLOGY & PSYCHIATRY

Herpetic Encephalitis and Meningitis in Man. J. Cambier. Presse méd. **63**:286-288 (Feb. 26) 1955 (In French) [Paris, France].

Since 1940, 10 cases reported in the literature have permitted the clinical and anatomic identification of acute herpetic meningoencephalitis, a disease that is fatal within 10 to 15 days. The lesions are the same as those of experimental encephalitis, with presence of acidophilic intranuclear inclusion bodies. Recent studies have confirmed the existence of curable encephalomeningitic complications of herpes by means of isolation of the virus responsible and investigation of the antibodies. Both the acute and the curable forms of these complications occur during the first infection of a person who has never been infected with the herpes virus. It is difficult to assess the statistical importance of this cause of meningoencephalitis; nevertheless, it would seem that a systematic study of antiherpetic antibodies is justified in any discussion of the causes of acute lymphocytic meningitis.

Electroshock Treatment in Involutional and Senile Psychoses. J. L. McCartney. J. Am. Geriatrics Soc. **3**:50-54 (Jan.) 1955 [Baltimore].

Of 3,817 patients referred for private psychiatric attention, 458 were between the ages of 45 and 80, 133 (29%) were men, and 325 (71%) were women. Of the 458 patients, a diagnosis of involutional reaction was made in 302 (66%), manic depressive reaction in 32 (7%), and arteriosclerotic or senile psychoses in 124 (27%). These patients were given from 1 to 16 electroshock treatments, 6 to 8 treatments on the average. Most of them showed no improvement until they had received at least four treatments, but many were stabilized after four treatments. Vertebral fracture was the most common complication from electroshock treatment in these patients; it was noted clinically in only three patients (less than 1%), although the rate was much higher in younger and more muscular patients. Of the 458 patients, 394 (86%) recovered. Only 68 (14.8%) of the 458 patients had to be certified for hospital treatment, in contrast to the usual state hospitalization rate of 40% for such patients. Thirty of the 394 patients who had been stabilized by electroshock (6.5% of the total of 458 patients) had a relapse within the follow-up period of almost eight years and required further treatment; only one had a relapse within one month. Most of them remained well for at least one year.

GYNECOLOGY & OBSTETRICS

Tuberculous Meningitis and Pregnancy. R. E. Marín Pittaluga. Hoja tisiol. **14**:333-338 (Dec.) 1954 (In Spanish) [Montevideo, Uruguay].

Nine patients with tuberculous meningitis, either late after puerperium or during pregnancy, were observed during the last 14 years in the Clinic for Tuberculosis of the Instituto de Tisiología of Montevideo. Abortion or premature delivery was not considered. The disease appeared within two or four months after delivery in five patients. All the patients died within a few weeks after appearance of the symptoms. Two patients died during the third and sixth months of pregnancy respectively. A patient had a premature, underweight child with hydrocephalus in the seventh month of pregnancy. The only patient who was observed during 1954 is the subject of this report. A young primipara complained early in pregnancy of symptoms of toxemia with marked loss of weight, fever, cough, acute headache, and vomiting. The sputum was positive for tubercle bacilli, and roentgen examination of the chest showed bilateral miliary tuberculosis. The treatment consisted of intramuscular injections of streptomycin in doses of 1 gm. twice a week up to a total dose of 30 gm. and of isoniazid and *p*-aminosalicylic acid in doses of 300 mg. and 12 gm., respectively, first daily and later, twice weekly. Early in the course of the treatment and when the patient was in the third month of pregnancy, tuberculous meningitis developed. The cerebrospinal fluid was altered. The additional treatment consisted of intrathecal injections of isoniazid in doses of 100 mg. twice a week, up to a total number of six injections. The meningeal symptoms rapidly disappeared, and the cerebrospinal fluid became normal. Marked improvement continued with the general treatment. Pregnancy followed a normal course up to spontaneous delivery of a normal child at full term. The infant was given Calmette vaccination and was in care of a family for four months, at the end of which he was returned to the mother who was discharged as clinically cured with an established pneumothorax. Roentgen examination of the chest confirmed the cure of the patient. When she was in her third month of pregnancy she weighed 44 kg. (97 lb.). When she was discharged from the hospital she weighed 55 kg. (122 lb.). The author concludes that the prognosis of tuberculous meningitis in pregnancy is more favorable since the discovery of chemical drugs and antibiotics.

Carcinoma of the Ovary Following Hysterectomy. V. S. Counseller, W. Hunt and F. H. Haigler Jr. Am. J. Obst. & Gynec. **69**:538-546 (March) 1955 [St. Louis].

One thousand five hundred cases of proved carcinoma of the ovary observed at the Mayo Clinic, between 1930 and 1952 were investigated. Sixty-seven of these patients (4.5%) had undergone hysterectomy for a benign condition. Three factors seemed important in the evaluation of these patients, namely, the age of the patient at the time of hysterectomy, the age of the patient at the time carcinoma of the ovary was found, and the interval of time between the hysterectomy and the occurrence of carcinoma of the ovary. The physiological activity of the ovary should have considerable influence in determining whether castration should be done in such patients before the climacteric period. This period is a variable one, so that it is not correct to say that it begins at the age of 40 or 44 years or at any other specific age. Only 2 of the 67 patients were less than 30 years of age, and 20 were in the age group from 30 to 39 years at the time of hysterectomy, while 45 patients were 40 years or older. While approximately 33% of the 67 patients were in the group less than 40 years of age, only 4.5% of the ovarian carcinomas occurred in that age group. The five year survival rate for 44 traced patients was 36.4%. Except under unusual circumstances it seems doubtful, therefore, whether patients less than 40 years of age who are to undergo hysterectomy for benign conditions should be advised also to have castration to prevent subsequent carcinoma of the ovary. The evidence suggests that one should advise castration for patients who undergo hysterectomy during and after the menopause. This period should be determined on the basis of the clinical evidence presented by the patient.

Postmaturity and Hypertension. J. D. Martin. J. Obst. & Gynaec. Brit. Emp. **62**:111-114 (Feb.) 1955 [London, England].

Martin investigated the nonsurvival of the fetus in postmaturity accompanied by hypertension in the mother. Patients were considered "hypertensive" if their diastolic blood pressure was 90 mm. Hg or over at any time during the antenatal period. Postmaturity was defined as a period of gestation of 290 days or over following the first day of the last menstrual cycle. Five thousand four hundred eighty-two records of deliveries at University College Obstetric Hospital in London between 1947 and 1951 were studied, and 1,000 postmature and 1,000 mature cases were collected. Cases of postmaturity with maternal hypertension have a significantly greater rate of nonsurvival than the mean death rate in postmature cases without maternal hypertension, and mature cases with or without hypertension. Considering a random group of 118 stillbirths and neonatal deaths from 1935-1946, death was significantly more frequently associated with maternal hypertension in the postmature. In view of these findings it was decided at the University College Obstetric Hospital in London that no mother who had had a rise of diastolic blood pressure over 90 mm. Hg at any time in her pregnancy should be allowed to become postmature. In these cases the forewaters are ruptured at term.

Are There Medical Indications for Therapeutic Abortions? J. P. Donnelly. J. M. Soc. New Jersey **52:**112-118 (March) 1955 [Trenton, N. J.].

At the Margaret Hague Hospital in Jersey City, N. J., eight therapeutic abortions and approximately 140,000 deliveries have been performed from 1931 to this date. This is an incidence of 1 in 17,500. This low incidence of therapeutic abortion has not brought about a higher maternal mortality. Donnelly reviews the traditional "indications" for therapeutic abortions and shows that such abortions are not justified in tuberculosis, carcinoma, mental disease, multiple sclerosis, hyperemesis, and heart disease. Over 500 pregnant women with cardiac disturbances were observed at the author's clinic since 1939, and, although no therapeutic abortions were performed in this group, there were only 2 deaths. The death rate in this series was only about a sixth of the death rate in nonpregnant women with cardiac lesions of a similar age group, and the author feels that therapeutic abortions would not have prevented these two maternal deaths. Therapeutic abortion is a highly dangerous procedure. It has a fetal mortality of 100% and an immediate maternal mortality of 5%, according to Moore. Clinics that report a rather high incidence of therapeutic abortions have not shown significant reductions in their mortality as the result of therapeutic abortions. Donnelly feels that acute toxemia superimposed on hypertension is the only valid medical justification for therapeutic abortion.

PEDIATRICS

Coronary Thrombosis in a Five-Month-Old Infant. R. R. Martelle. J. Pediat. **46:**322-326 (March) 1955 [St. Louis].

A case of coronary thrombosis resulting from an acute myocarditis, endocarditis, and coronary arteritis possibly due to rheumatic fever is described in a 5-month-old baby boy. The infant's mother noted that, beginning at 2 weeks of age, he seemed to prefer to be held upright in her arms rather than in the reclining position; this may actually have been orthopnea and was one of his earliest symptoms. The infant subsequently had an illness characterized by fever, vomiting, loose stools, and dry skin. It very likely was actually an active phase of the myocarditis and endocarditis. Two weeks before his admission to the hospital he had been irritable, "groaned," refused to eat, and vomited several times. He died suddenly before his examination could be completed. Autopsy revealed a widespread degeneration of the muscle fibers of the heart, amounting in some areas to a massive necrosis. In addition, a pronounced inflammatory process was seen, with lymphocytic and mononuclear infiltration. Besides manifesting itself in the form of a severe myocarditis and endocarditis, this inflammatory process also took the form of a severe arteritis involving chiefly the coronaries but also the aorta. Aneurysmal dilatation of the proximal portions of both major coronary vessels ensued, followed by their complete occlusion. The clinical course and the pathological findings appeared to compare closely with four cases ascribed to rheumatic fever by Gross and associates and Rae. Rheumatic fever as a cause of coronary occlusive disease in infants is comparatively rare, while a review of the literature showed that coronary occlusive disease in infants is somewhat more common than one might suspect from the usual brief mention it receives in most pediatrics textbooks.

An Epidemiological Study on Pseudomonas Aeruginosa (Bacillus Pyocyaneus) in Premature Infants in the Presence and Absence of Infection. E. Neter and D. H. Weintraub. J. Pediat. **46:**280-287 (March) 1955 [St. Louis].

Of 143 premature infants who were studied with respect to the presence of Pseudomonas aeruginosa in the nasopharynx, throat, feces, and on the skin, 35 (25%) were harboring Ps. aeruginosa on the skin, 73 (51%) in the feces, 38 (27%) in the nasopharynx, and 57 (40%) in the throat. Ps. aeruginosa was found in the feces of only one of these infants on the day of admission, though not in the throat, nasopharynx, or on the skin; from 16% to 47% (depending on the specimen) of the infants harbored this micro-organism on the third or fourth day after admission, indicating that this micro-organism was acquired readily within a few days after admission to the nursery. Of 35 premature infants, 19 carried this micro-organism in their feces and 21 in their throats for two weeks; the carrier state of the skin tended to be more transient. Ps. aeruginosa was present in large numbers on the skin of 8 infants (6%), in the feces of 24 (17%), in the nasopharynx of 23 (16%), and in the throat of 30 (21%). In most of these premature infants the presence of this micro-organism was not associated with clinical infection. Systemic infection, however, occurred in five infants, four of whom died. Corticotropin (ACTH) was given to 20 infants because of beginning retrolental fibroplasia, 16 of whom also received antibiotics. In three of the five infants with systemic infection, this occurred after corticotropin therapy. At the termination of the authors' study the carrier state of Ps. aeruginosa in premature infants had declined considerably without special measures, and this micro-organism has been encountered in premature infants during the ensuing two years only occasionally. The transmission to many infants of Ps. aeruginosa, once introduced into the nursery, represents an extraordinary experience, since it is generally recognized that this micro-organism does not belong to the regular and permanent resident bacterial flora of healthy infants and children. It is obvious from the results of the authors' study that, had diarrheal disease been present in the premature infants harboring Ps. aeruginosa in the feces, the enteric disease might have been ascribed erroneously to this bacterial species, although it actually might have been due to other causes. Therefore it would be desirable, in order to differentiate actual infection from mere carrier state, to demonstrate an antibody response of such patients. Since Ps. aeruginosa is not an antigenically homogenous bacterial species, the question arises as to the possible relationship between different serologic types and potential pathogenicity.

Response of Small Premature Infants to Restriction of Supplementary Oxygen. M. A. Engle and S. Z. Levine. A. M. A. Am. J. Dis. Child. **89:**315-324 (March) 1955 [Chicago].

Because of the common occurrence of respiratory irregularities associated with immaturity of the respiratory tree, the respiratory center, and the structures of the thoracic cage and the frequent superimposition of intracranial hemorrhage at birth, it has been customary to provide small premature infants with an oxygen-rich environment. When evidence began to accumulate of the possible harmful effect of oxygen therapy in the causation of retrolental fibroplasia, it became important to reexamine the necessity for this form of therapy. Observations are presented on a group of 99 premature infants with birth weights of 1,650 gm. and below who by a modified random sampling technique were kept in oxygen until a weight of 1,600 gm. was attained (group 1, prolonged oxygen therapy) or were taken out of oxygen earlier, at 5, 10, or 17 days, depending on the birth weight (group 2, curtailed oxygen therapy). Weaning from oxygen took place for both groups over a four day period. The average time in oxygen was three to four times as long for group 1 as for group 2 infants. Oxygen concentrations, measured daily, were comparable for the two groups. Over half were in oxygen at concentrations of 40 to 50%, 19 at levels above 50%, and 26 at concentrations below 40%. Except for five infants with weights less than 1,000 gm. and two babies in poor condition at the time of scheduled oxygen reduction, all group 2 infants tolerated removal from oxygen at the appointed time without difficulty. The subsequent development was followed in 75 babies for a minimum of six months and in 50 for a minimum period of one year to as long as two and a half years. The gain in weight and height and the rate of motor development of group 1 and group 2 infants was similar. There were no detectable late ill-effects from the early termination of oxygen administration. It would seem that administration of oxygen to premature infants of low birth weight as a routine procedure is not necessary. Definite conclusions must await similar follow-up studies on small premature infants exposed to lower concentration of oxygen or to atmospheric oxygen from birth.

Regional Enteritis in Children: Report of Two Cases. W. K. Howard, E. J. Pulaski and R. W. Morrissey. J. Pediat. **46**:298-302 (March) 1955 [St. Louis].

The occurrence of regional enteritis is reported in a 2½-year-old girl and in a 5½-year-old girl. The younger girl, who had an acute obstruction of the small intestine, is thought to have had one of the earliest acute cases of regional enteritis with complications reported in children. The older girl had a chronic partial obstruction of the lower intestine and had one of the few cases reported in children which ran a chronic clinical course similar to that observed in adult patients and in which among multiple areas of involvement the jejunum was affected. The course of regional enteritis in children is more often the acute form, simulating acute appendicitis and subsiding spontaneously. A trial on a medical regimen of observation, antibiotics, and supportive therapy would seem warranted in all cases of regional enteritis in children, except in those with complication; failure of the medical regimen or the development of complications would call for surgical intervention. In accordance with these principles, an exploratory laparotomy was done in both patients; it revealed the entire mesentery of the small intestine of the younger patient to be extensively involved with mesenteric adenitis. A 7 to 8 in. segment of the ileum was enlarged and cyanotic, with adhesions of the serosal surface. This portion of the ileum was resected, and an ileoileostomy was performed. In the older girl, a jejunojejunostomy was performed, and one month after the surgical intervention the gastrointestinal roentgenograms were normal. Regional enteritis should be considered in all cases of unexplained abdominal pain in children.

Lead Poisoning in Children: Including Nine Cases Treated with Edathamil Calcium-Disodium. A. L. Tanis. A. M. A. Am. J. Dis. Child. **89**:325-331 (March) 1955 [Chicago].

Whereas during the 14 year period between 1939 and 1952, 20 cases of lead poisoning were diagnosed at the Children's Memorial Hospital in Chicago, during the year 1953, the diagnosis of plumbism was substantiated by means of history and laboratory examination in 13 children. The 33 children were all less than 5 years old. Almost without exception these children come from families in the poorest economic groups, whose homes or apartments are in poor repair, often with paint peeling off the walls. Paint chips from window sills were incriminated in 13 cases and paint and painted plaster from the walls in 8 cases. Ten children developed plumbism from chewing on painted cribs and furniture, but it is significant that nine of these cases occurred prior to 1953. This probably represents the effect of legislation requiring paint manufacturers to label whether the paint is for indoor or outdoor use and the percentage of lead contained. This trend has also manifested itself in the toy industry, and the only two children who had painted toys as the source of their ingestion were among the first cases in the series. Laboratory and roentgen examinations are often invaluable aids in the diagnosis. The presence of acid-fast intranuclear inclusion bodies in the kidney and liver, as described by Blackman, proved valuable in confirming the diagnosis. The treatment of lead poisoning has undergone a dramatic change by the addition of edathamil calcium-disodium to the armamentarium. This substance is a nontoxic agent that can mobilize lead, form a stable compound, and then be promptly excreted in the urine. The edathamil calcium-disodium is given by the intravenous route as a 3% solution or less. The maximum dose is 1 gm. per 30 lb. (13.6 kg.) per day, or 5 to 7 gm. per 30 lb. per course, with seven days rest between courses. Edathamil calcium-disodium was used in nine patients in 1953, three of whom died within the first 36 hours of hospitalization. Excellent results were obtained in six of the nine patients treated with edathamil calcium-disodium. The three patients who died presented the picture of severe encephalopathy. There were 6 deaths among the 33 children (18% mortality). A high mortality rate and a high incidence of severe life-long residual nervous system injury has been noted by many investigators. The mental development of children with even the less severe lesions may be seriously impaired.

Corticotropin and Cortisone in Rheumatic Fever: Preliminary Report of Effect on Electrophoretic Patterns of Plasma or Serum Proteins of Children. G. J. Van Leeuwen, H. G. Kelly and R. L. Jackson. A. M. A. Am. J. Dis. Child **89**:304-313 (March) 1955 [Chicago].

Rheumatic fever not only is most frequent but it also causes the most serious complications in children whose general health is suboptimal prior to its onset. Van Leeuwen and associates gave their attention to the host factor. Studies in their clinic had shown that protein metabolism is altered, and electrophoretic analysis of plasma or serum proteins of patients with rheumatic fever provides a sensitive laboratory test that reflects the course of the disease. The authors felt that observations on the changes in the protein fractions of the blood during hormonal therapy would increase the knowledge of the action of these drugs and provide added insight into the abnormal physiology of the disease. They discuss the serial electrophoretic patterns of nine children treated with corticotropin or cortisone. Their preliminary data indicate that hormonal therapy exerts a definite effect on albumin, alpha$_1$ globulin, beta globulin, and gamma globulin. The rapid return of albumin to normal is a compensatory response resulting from the decrease in the percentage of globulins. Alpha$_1$ globulin returns to normal more rapidly than in the nonspecifically treated group. This may mean that the acute-phase reactions in rheumatic fever are shortened by hormonal therapy. Beta globulin either remains elevated or becomes even more elevated during the course of treatment. Gamma globulin decreases rapidly, sometimes to subnormal levels. This suggests that the major effect of the hormones is related to hypersensitivity processes of the disease. Hormonal therapy has little effect on the alpha$_2$ globulin or mucoprotein tyrosine. These findings make the authors skeptical of the value of these drugs in preventing residual cardiac damage.

THERAPEUTICS

Investigation of the Effects of the Intra-Arterial Administration of Nitrogen Mustard and Chlortetracycline on Two Transplantable Rat Tumors. E. G. Trams and C. T. Klopp. Antibiotics & Chemother. **5**:67-77 (Feb.) 1955 [Washington, D. C.].

The studies described were designed to determine whether in the rat the intra-arterial administration of methyl-bis (B-chloroethyl) amine hydrochloride alone, or in combination with chlortetracycline, was more effective than the intraperitoneal injection in producing regression of regionally placed tumors, and whether concomitant use of a combination of the two drugs was more effective than either drug alone. Cannulization of the left iliac artery of each of a group of rats was carried out. Polyethylene tubing was introduced alongside a straight surgical needle, which punctured the artery and advanced in a retrograde direction until the tip of the cannula lay just below the bifurcation of the aorta. The tubing was secured by ligatures, and the distal end, carried subcutaneously to the neck, was brought out through an incision in the skin. The patency of the system was checked by withdrawing blood through the tube, the cannula was filled with saline, and the distal end plugged with a fine wire. Subsequent injections were given through a blunted needle inserted into the distal end of the cannula without anesthetizing the animal. Two transplantable tumors were studied: a carcinoma of the harderian gland, designated no. 2226, carried in the buffalo rat, and a pseudomucinous adenopapillary carcinoma of the ovary, designated OVCA, carried in the Osborn-Mendel rat. Each tumor was transplanted subcutaneously into the upper portion of the right hind leg of the rat, and treatment begun after the tumor had become easily palpable (8 to 10 mm. in diameter), or about three to four weeks after implantation. Injections of drugs were given daily for from 4 to 21 days. No regression occurred in the tumors of the untreated animals, whether starved or fed at will. Better therapeutic effects were obtained through the intra-arterial route of administration than the intraperitoneal route. Histological evaluations of the tumors revealed that each drug had a specific effect on each tumor studied. Partial maturation of the ovarian tumor was observed after the administration of high doses of chlortetracycline. Total and partial regressions

were noted in both tumors with each type of therapy. The site of the neoplastic growth and the degree of vascularization play a major role in the production of local effects by any intra-arterially administered drug, a factor that was also apparent in clinical trials. By means of the intra-arterial administration, however, the local drug concentration can be considerably increased, and it may result in higher regression rates than would be produced by most other methods of drug administration. The authors feel that, while caution is necessary to avoid side effects, intra-arterial administration of certain agents evokes regional effects, which have been and can be of value in the palliative treatment of human cancer patients.

Medical Treatment of Aortoiliac Obliteration. F. Martorell. Angiology **6**:28-31 (Feb.) 1955 [Baltimore].

A preparation of extracts of horses' spleens (Esplenohormon fortis) that in addition to its vasodilating action possesses a lipotropic action and a decholesterolizing action derived from its content in choline and methionine, in a daily dose of 5 cc. intramuscularly, combined with heparin in small doses intravenously as a lipoproteic modifier or in large doses as an anticoagulant, was given to six men between the ages of 48 and 61 with thrombosis of the bifurcation of the aorta. Results showed that this condition can be successfully treated by medical means. Ischemia in the lower extremities disappeared, and sexual potency was improved or restored despite slight persistence of intermittent claudication. Medical treatment would not be adequate if surgical treatment could give better results. From the author's experience with resection of the end of the aorta and of both common iliac arteries in a patient with aortoiliac thrombosis associated with bilateral intermittent claudication and impotence of several years' duration who died two days after the operation, and from the results of surgical treatment in cases collected from the literature, it appears that neither aortectomy nor bilateral sympathectomy constitute operations of reliable efficacy. Only aortectomy followed by grafting promises good results. But this operation, unfortunately, requires a circumscribed area of obliteration that does not occur frequently in arteriosclerotic patients. For this reason Martorell considers that in most cases of obliteration caused by thrombosis of the aorta and of the two common iliac arteries, medical treatment is indicated. The combination of anticoagulants and lipotropic and decholesterinizing medication proved most effective.

The Treatment of Pulmonary Tuberculosis with Intravenous PAS Infusions. F. Charles. Tubercle **36**:40-42 (Feb.) 1955 [London, England].

Fifty patients between the ages of 18 and over 60 years with pulmonary tuberculosis were given 2,235 intravenous infusions of *p*-aminosalicylic acid at the Parksanatorium in Davos-Platz, Switzerland; on the average one patient was given about 45 infusions. The infusion-solution was made as follows: 5 mEq. of potassium were added to a freshly prepared 5% sodium *p*-aminosalicylate solution and passed through a filter by nitrogen pressure. The solution was put up 500 cc. to each flask, which corresponds to 25 gm. of sodium *p*-aminosalicylate or to 18 gm. of the free acid. Prepared by filtration technique and not by heat sterilization, the solution has a content of only 0.25% of m-aminophenol, which does not cause secondary toxic reactions. The infusion time varied from 90 to 120 minutes. Three infusions per week gave the best results. Due to the high blood level that the *p*-aminosalicylic acid concentration allows and that was at least 10 times greater than that obtained by oral administration, and due to the ease of tissue permeation, the results obtained with combined treatment with streptomycin were at least equal to those of combined streptomycin and isoniazid therapy. The results far surpassed those of oral treatment with *p*-aminosalicylic acid. The astonishing tolerance of the infusions in contrast to oral therapy is emphasized. The absolute indications for *p*-aminosalicylic acid infusion therapy include all forms of miliary and meningeal tuberculosis and all serious exudative forms, especially caseous pneumonic and bronchial tuberculosis. Relative indications for this type of therapy consist of bronchogenic and hematogenic phases of spreading disease (exudative pleurisy); preoperative treatment especially of patients with contralateral lesions; postoperative treatment for the prevention of spread of the disease; cases resistant to streptomycin and isoniazid.

Four-Year Study Concerning the Inactivation of Viruses in Blood and Plasma. F. W. Hartman, A. R. Kelly and G. A. LoGrippo. Gastroenterology **28**:244-256 (Feb.) 1955 [Baltimore].

Screening of 550 compounds for antiviral activity in plasma has revealed that most active viricides can be classified in one of seven groups, based on chemical structure. Of the active agents, nitrogen and sulfur mustard, ethylene oxide, and beta-propiolactone (BPL) have shown the best potentialities for sterilizing blood or plasma, and the latter is the best of all. The bulk of virus activity in plasma can be destroyed by relatively low concentrations of this drug (100 mg. per liter), even in the case of the sturdiest laboratory virus. However, two to three times this basal concentration is required to inactivate residual traces of these viruses and thus to insure absence of infecting units in transfusion volumes of plasma. The extent to which the basal concentration must be augmented to overcome this so-called trailing effect appears to be a function of individual virus resistance. Therefore, the concentration required for complete sterilization of the serum hepatitis virus must necessarily be determined directly by studies with that virus in human volunteers. Investigations of this type have been in progress elsewhere for sometime. Such factors as virus titer and plasma protein concentration also influence the sterilizing dosage of this compound. Beta-propiolactone possess possibilities for sterilizing erythrocyte suspensions. It has been found to be mutually potentiating with ultraviolet irradiation when they are used in combination for the sterilization of plasma. Plasma treated with beta-propiolactone displays a striking lack of toxicity even at concentrations three to four times those required for complete inactivation of laboratory viruses. Over a three year period 241 patients have received 767 transfusions of plasma treated at viricidal concentrations without evidence of toxic effect or production of serum hepatitis.

Treatment of Acute and Chronic Lead Poisoning with Disodium Calcium Versenate. J. F. Wade Jr. and J. F. Burnum. Ann. Int. Med. **42**:251-259 (Feb.) 1955 [Lancaster, Pa.].

According to Wade and Burnum disodium calcium ethylenediaminetetraacetate (Ca EDTA) is a relatively new metal chelating agent that enhances the urinary excretion of lead. The parent compound, ethylenediaminetetraacetic acid (EDTA), is a synthetic polyamino polycarboxylic acid. Its tetrasodium salt forms a stable, water-soluble, nonionizable ring complex with a variety of metallic ions. The phenomenon of binding such ions in nonionizable complexes is termed chelation, and the end-product is a metal chelate. The successful employment of chelating agents in industry for the control of undesirable cations in solution suggested their use as a means of mobilization of certain toxic metallic ions in man. This report deals with experience in the treatment of five cases of lead intoxication with Ca EDTA. All patients were hospitalized, and the diagnosis of lead intoxication was confirmed by quantitative urinary lead analysis. The drug was given by the intravenous route in a daily dose of 0.5 to 2.0 gm. in 500 ml. of isotonic sodium chloride solution over a period of one to two hours. The patients received an average total dose of 15 gm. over a 10 day period. The authors found that the ability of disodium calcium ethylenediaminetetraacetate to chelate toxic soluble lead ions in vivo affords an effective method of therapy for lead intoxication. Due to greater affinity of disodium calcium ethylenediaminetetraacetate for lead ions, calcium is replaced by lead in the chelate ring and the resulting lead ethylenediaminetetraacetate is rapidly excreted unchanged by the kidneys. In the patient reported in this paper, lead diuresis was accompanied by a series of spectacular effects. There was a rapid disappearance of such manifestations of lead intoxication as tremor, confusion, ataxia, headache, insomnia, hypertension, anorexia, diarrhea, abdominal pain, and acute abdominal signs. Lead deposits in the gums disappeared in all but one patient, and previously increased numbers of stippled erythrocytes and ele-

vated indirect serum bilirubin returned to normal levels. No toxic effects from disodium calcium ethylenediaminetetraacetate administration occurred. However, it has not yet been conclusively demonstrated that ethylenediaminetetraacetate will not inactivate metal containing enzyme systems as occurs in dimercaprol poisoning. Lowered prothrombin activity has been reported in a case of hemochromatosis after disodium calcium ethylenediaminetetraacetate therapy. The authors conclude that disodium calcium ethylenediaminetetraacetate affords a safe and effective means of treating acute and chronic lead poisoning.

Anorectal Syndrome After Antibiotic Treatment. R. Kós and N. Kázmér. Zentralbl. Chir. **79:**1704-1706 (No. 40) 1954 (In German) [Leipzig, Germany].

Kós and Kázmér found that increasing numbers of the patients referred to them for rectoscopic examinations complained of burning pain in the rectum, pruritus in the anal region, and repeated slight hemorrhages from the rectum, particularly after defecation, in the absence of fissures or hemorrhoids. On rectoscopic examination the mucosa was dull rather than shiny and showed discrete areas of hyperemia, which had a tendency to erode or bleed, or to form petechiae. Pruritus was extremely annoying. Nearly all of these patients had received antibiotic treatment. These patients had been treated for long periods with penicillin, chlortetracycline (Aureomycin), streptomycin, or chloramphenicol, frequently in combination with sulfonamide preparations such as sulfaguanidine. The culture of feces in some cases yielded fungi of the monilia type. The anorectal syndrome differs from other secondary effects of antibiotic therapy in that it persists much longer. Whereas most complications of antibiotic therapy subside as soon as treatment is interrupted, the anorectal syndrome may persist for months after treatment has been discontinued. The development of the anorectal syndrome may be prevented by giving the vitamin B complex together with the antibiotics; vitamin B_2 (lactoflavin) alone is not sufficient. The vitamin B complex, together with vitamins C and K, and the use of yoghurt seem to be helpful in the treatment of this syndrome.

Treatment of Lead Poisoning with Ethylenediaminetetraacetate. P. Eilersen, P. Astrup, B. Fallentin and J. Frost. Ugeskr. læger **117:**124-127 (Feb. 3) 1955 (In Danish) [Copenhagen, Denmark].

Four patients with lead poisoning—three with clinical signs of chronic lead poisoning, the fourth with recent characteristic symptoms—were treated with intravenous infusion of 4 gm. monocalcium disodium ethylenediaminetetraacetate (Komplexon-3-calcium) in 500 ml. of 5% glucose solution daily for two days. The urine was examined for total lead and inorganic lead in 24 hour periods before, during, and after treatment. The analyses revealed marked increase in lead elimination during and immediately after the infusion. In three patients daily examination of the calcium excreted in the urine showed a considerable rise during and after the treatment. No toxic reactions were seen, and the patients were subjectively free from symptoms on discharge. In spite of the manifold increase in lead excretion, the total amount excreted was small in comparison with the amount that had presumably accumulated in the tissues during long exposure to lead. The greatest value of the treatment is therefore in acute intoxication.

Acute Lead Intoxication Treated with Ethylenediaminetetraacetate. K. Mellemgård and G. Sørensen. Ugeskr. læger **117:**127-129 (Feb. 3) 1955 (In Danish) [Copenhagen, Denmark].

Few cases of acute lead poisoning treated with ethylenediaminetetraacetate have been published. In the instance described, in a 17-year-old girl with acute lead intoxication after ingestion of lead oxide, 2 gm. monocalcium disodium ethylenediaminetetraacetate in a 5% glucose solution was administered intravenously daily for six days. During the first two days the excretion of lead in the urine was greatly increased and thereafter moderately increased. The amount eliminated was only a small amount of the lead deposited in the organism. The continued increased lead excretion a month after treatment ended and the persisting anemia also showed that not all the lead had been excreted. Ethylenediaminetetraacetate can apparently combine with only a certain mobile lead fraction, probably the circulating lead. The treatment is thus first and foremost indicated in acute cases. Intermittent treatment may perhaps be useful in chronic cases.

Isonicotinic Hydrazide in Treatment of Leprosy. J. H. Hale and B. D. Molesworth. Internat. J. Leprosy **22:**297-302 (July-Sept.) 1954 [New Orleans].

Experiments with isonicotinic acid hydrazide (Isoniazid) in murine leprosy showed that it was extremely successful in inhibiting the multiplication of Mycobacterium leprae murium. In order to assess the efficacy of this compound in human leprosy a clinical trial was undertaken at the Sungei Buloh Settlement in Selangor, Malaya, with adequate laboratory control. Of the 83 patients who underwent treatment for eight months, 26 showed some form of improvement, but it must be noted that 18 of these were in the atypical group. Since spontaneous changes take place frequently in cases of this group, it is difficult to assess the effect of the drug. Because only 24% of the whole series became progressively worse while under the treatment, it is believed that the drug is not without some limited therapeutic effect. It is not, however, comparable in efficiency to the sulfones.

RADIOLOGY

Cerebral Complications Following Cardioangiography. S. N. Chou, L. A. French and W. T. Peyton. Am. J. Roentgenol. **73:**208-210 (Feb.) 1955 [Springfield, Ill.].

Chou and associates present the histories of two patients in whom severe neurological complication resulted from cardioangiography using retrograde brachial artery injections of 70% diodrast. In the first patient, a woman aged 56, a chest roentgenogram was suggestive of an aneurysmal dilatation involving the arch of the aorta. For further investigation a retrograde aortogram was done. The left brachial artery was visualized and cannulated. It was injected with 45 cc. of 70% diodrast. During the injection, the patient became diffusely hyperemic, developed spastic contractions of the upper extremities, and then became aphasic. She became comatose and had episodes of generalized convulsions. She died eight hours after the procedure. In the second patient, a woman aged 65, an aneurysm in the region of the great vessels was suspected, and 31 cc. of 70% diodrast was injected into the left brachial artery. The patient seemed to tolerate the procedure well, but, while being transported back to her bed, Cheyne-Stokes type respiration was observed. She responded very poorly. Her blood pressure fell. She remained in the same general condition for the next 24 hours. Vasopressor drugs were used intermittently to combat hypotension. On the next day, bilateral Babinski signs were noted. Flaccid paresis of both arms developed. She gradually improved over a period of several weeks. The authors show that several factors might play a part in the development of these complications: contrast mediums such as diodrast disrupt the blood-brain barrier, and they are transient vasodilators; furthermore, the technique used in retrograde aortography is such that there is a strong possibility that contrast medium will ascend the carotid and vertebral vessels into the cerebral vascular system. In the two reported cases, it is reasonably certain that the contrast medium caused at least temporary damage to the central nervous system, thereby producing profound neurological symptoms in one and death in the other.

Radiology of the Lung in Severe Mitral Stenosis. D. S. Short. Brit. Heart J. **17:**33-40 (Jan.) 1955 [London, England].

The radiographic appearances of the lungs were studied in 33 patients with rheumatic mitral stenosis. In 28 of the 33 cases, the radiographic examination was made within four weeks of operation or autopsy. The patients were selected because the mitral orifice was known to measure 1 cm. or less in length,

so that the stenosis was severe in each case. The assessment was made at operation in 30 cases and twice it was later verified at necropsy; in the remaining 3 the valve was examined only at necropsy. Aortic incompetence was diagnosed in 5 cases and mitral incompetence was detected by the surgeon in 13, but never did the electrocardiogram or cardioscopy suggest left ventricular enlargement, so that associated valvular lesions were regarded as slight. Electrocardiographic evidence of right ventricular enlargement was definite in 21, equivocal in 5, and absent in 7 cases. Twelve patients had suffered from failure of the right side of the heart at some period before operation. The lung architecture was abnormal in each patient, though the degree of abnormality varied widely, being slight in some and considerable in others. Hilar clouding was present in 30 and loss of translucency in 24. Pleural involvement was evident in 15, 2 of whom had a right-sided effusion. The vascular pattern was abnormal in 30 patients. Most commonly the intrapulmonary arteries were obscured by a profusion of small vessels, but occasionally these arteries were well-defined and severely attenuated. Septal lines were found in 25 cases, and, though never the sole abnormality, they were sometimes the most impressive. Serial radiography showed the changes to be persistent and slowly progressive. A normal lung architecture is inconsistent with a diagnosis of severe mitral stenosis.

Observations on the Use of Chlorpromazine Hydrochloride in Radiation Sickness. D. O'Connell. J. Fac. Radiologists **6**:214-216 (Jan.) 1955 [Bristol, England].

Since chlorpromazine hydrochloride has a marked antiemetic action, it was used for the treatment of radiation sickness in 38 patients in the radiotherapy department at Charing Cross Hospital. The dosages used were 25 mg. three times a day by mouth, occasionally being advanced to 50 and 75 mg. three times a day. In cases of intractable vomiting the drug was given intramuscularly for the first few doses. The results obtained were good in 20 cases, fair in 15, and the others received no benefit. The drug generally cut short severe nausea and vomiting from radiation sickness, in some cases relieving them completely, while in others, the majority, relieving them sufficiently for radiotherapy treatment to be carried out as planned. Usually on withdrawal of the drug during treatment the symptoms reappeared, though sometimes the patient did not need further medication after the first week of treatment. It was not found that diarrhea responded to the drug, though, whenever this symptom was combined with nausea and vomiting, the latter were usually completely relieved. However, patients who were receiving chlorpromazine for nausea before the onset of the diarrhea did not seem to suffer the effects to the same degree as those who were treated after diarrhea had been established. The side-effects of the drug with the dosages used were mainly drowsiness and acute depression, and in two cases the drug was probably responsible for subacute toxic hepatitis. Whenever nausea and vomiting were unrelieved and drowsiness, tiredness, and lassitude increased, the dosage of chlorpromazine hydrochloride was not increased, but the drug was abandoned, and the latter symptoms usually returned to previous levels. The most common side-effect, drowsiness, occurred to an uncomfortable degree in some patients, one of whom could not sleep at night during the same period. Depression, with headache, occurred in three cases; however, the headache was not severe and the patients recovered their good spirits on cessation of this treatment.

A Cobalt 60 Beam Unit with a Source-Skin Distance of 20 CM. F. W. Spiers and M. T. Morrison. Brit. J. Radiol. **28**:2-7 (Jan.) 1955 [London, England].

Spiers and Morrison converted a radium beam unit to one that would operate with a 50 curie cobalt-60 source at a skin distance of 20 cm. The conversion, which was relatively simple, provided well-collimated beams of high-energy gamma rays having percentage depth doses approximately equivalent to those obtained with x-rays of high voltage, 2-3 mm. Cu, at a focus skin distance of 50 cm. The unit has been in clinical use for more than a year, and the protection of the operator and the reliability of the pneumatic transference mechanism have proved to be such as to justify the increase in source strength to over 100 curies, which has recently been made. The surface dose rate is 55 r per minute (January, 1954) and the performance of the unit is therefore equal to that of the commonly used "deep" x-ray apparatus, with the added advantage that it provides high-energy gamma rays that are so desirable for the irradiation of the heterogeneous structures of the human body.

The Effects of Irradiation of the Pelvis in Patients with Carcinoma of the Cervix Uteri on the Iliac and Sternal Marrow and on the Peripheral Blood. L. W. Hutaff and H. W. Belding. Am. J. Roentgenol. **73**:251-258 (Feb.) 1955 [Springfield, Ill.].

The studies carried out by Hutaff and Belding involved sampling of the bone marrow before treatment and after therapy with both roentgen rays and radium. Twelve consecutive patients with carcinoma of the cervix proved by biopsy submitted to the experiment. Samples of bone marrow were obtained before and at varying intervals after the initiation of roentgen therapy in 10 patients. In only two of these patients were samples of the marrow obtained after treatment with radium as well as after roentgen therapy. Hemoglobin levels, hematocrit values, erythrocyte and leukocyte counts, and smears of the peripheral blood were obtained at the time of the initial aspiration of the marrow. When possible, leukocyte and differential counts were made daily while the patient was treated with roentgen therapy. Before the initial roentgen treatment or within 24 hours after it, bone marrow was aspirated from one iliac crest. At the time of implantation of radium, samples of marrow were removed from the opposite iliac crest and the sternum. It was found that leukopenia, neutropenia, and lymphopenia occurred in the peripheral blood and persisted for variable periods of time. Neither absolute nor relative lymphocytosis was observed in the peripheral blood at any time during or after the treatment period. Examinations of material aspirated from the marrow adjacent to the site of irradiation showed marked depletion of all the marrow elements, while the samples from the sternal marrow exhibited increased cellularity. Early in the course of roentgen therapy there appears to be a transient lymphocytosis in the irradiated bone marrow. In most cases evidences of recovery were demonstrated in the bone marrow from the irradiated area from 12 to 84 days after roentgen therapy had been discontinued. Even in the patients in whom irradiation extended beyond the 28 days usually required for this type of therapy, the erythrogenic cells in the marrow of the iliac crest showed a tendency to increase after cessation of treatment. At the same time the myeloid cells, while not greatly altered in proportion to the other marrow constituents, continued to show an increase in the number of mature forms. The compensatory effort on the part of sections of the marrow organ distant from the site of irradiation must be considered as a potent factor in effecting the return of the peripheral blood to normal values. Hormonal factors may be responsible for the so-called distant effects of localized roentgen therapy. In the reported cases the disturbances of endocrine balance caused by direct irradiation of the ovaries might well have affected the blood picture.

Focal Pulmonary Hemosiderosis in Rheumatic Heart Disease. M. J. Esposito. Am. J. Roentgenol. **73**:351-365 (March) 1955 [Springfield, Ill.].

Focal pulmonary hemosiderosis is not so rare a sequela of rheumatic heart disease as earlier reports would indicate. A study of the lung sections in 100 cases of severe rheumatic heart disease coming to autopsy at the New York Hospital between 1945 and 1953 revealed 28 histopathological cases of focal pulmonary hemosiderosis. With the exception of four early cases caused by aortic narrowing, all cases were the result of mitral stenosis. Study of the available roentgenograms revealed a very definite diffuse miliary nodulation in five advanced cases with focal hemosiderin collections, measuring 1 to 3 mm. on the microscopic section. Three additional cases with striking roentgenograms, two of which were verified at autopsy, are also reported. Clinically, there was a high incidence of hemoptysis, but the condition did not present distinctive features. There was a definite tendency for the condition to occur in the third and fourth decades of life. Although microscopically, no sex predilection was noted, the most advanced cases tended to occur in young males, and hence they may be more liable to detection by roentgen study. The salient pathological finding was a

well-demarcated nodule of agglomerated pigmented macrophages produced by repeated hemorrhages. Edema and venous congestion exert a favorable influence on the development of such foci; localized fibrosis, apparently induced by the hemosiderin, prevents escape of the phagocytes into the lymphatic channels and so perpetuates the nodule. Since the process is a completely benign one, its importance stems solely from the fact that roentgenographically, in advanced form, it can simulate many other diseases that can produce a miliary pulmonary infiltration, including miliary tuberculosis, the pneumonoconioses, sarcoidosis, and metastatic carcinoma. However, the roentgen picture is not always clear cut, and the less obvious cases can easily masquerade under the guise of pulmonary congestion.

Tumor Outline of Esophageal Carcinoma. L. L. Haas and B. Baker. Radiology **64**:241-248 (Feb.) 1955 [Syracuse, N. Y.].

According to Haas and Baker the roentgenologic diagnosis of carcinoma of the esophagus is usually based upon the alterations seen in the barium-filled lumen, such as filling defects produced by the fungating tumor, excavations due to necrotic ulcers, obstruction, suprastenotic dilatation, perforation, and indentations by paraesophageal lymph node metastases. The extension of the tumor is usually determined from the length of the lesion as indicated by the filling defect. This procedure is unsatisfactory, since it fails to outline the tumor in its lateral extent and therefore does not satisfy the general principles of tumor localization, for which all the dimensions of the lesion should be determined: length, width, and depth. The intramural and/or extraesophageal extension may significantly affect therapeutic indications and prognosis. The added knowledge of lateral or depth extension may influence radiation technique and selection of fields. Direct roentgenographic visualization of esophageal tumors is a neglected field; many textbooks and articles fail to mention it. In another report in this same issue, the authors describe the direct roentgen signs of esophageal cancer detectable on plain roentgen films of the neck. Here they consider the outline of the carcinoma as demonstrated on the roentgenogram and its diagnostic significance. They gained the impression that there is no special technique that visualizes the tumor. Any good technique resulting in high-contrast films may satisfy the requirements. With low-voltage ranges good films of the barium filling are obtained, but the penetration is not sufficient for differentiation of the complex periesophageal shadows. High-voltage films are usually more satisfactory. In lesions of the cervical and highest thoracic segments, alterations of the hypopharyngeal structures (piriform sinus), and widening of the prevertebral soft-tissue shadow on the lateral neck film are diagnostic. In the upper thoracic segment the tumor is outlined anteriorly by the air contrast of the trachea. Posteriorly it may be visualized by its difference in density from the surrounding structures and by superimposition upon the spine and other tissues. Tumors of the lower half of the thoracic esophagus are similarly demonstrated by differences in density and superimposition. In the thoracic segment the lateral and right anterior oblique views are best for obtaining direct tumor shadows. A complete study should include posteroanterior, lateral, right anterior oblique, and left anterior oblique views.

Comparison of Esophagoscopic and Roentgenologic Diagnosis of Esophageal Varices in Cirrhosis of the Liver. I. B. Brick and E. D. Palmer. Am. J. Roentgenol. **73**:387-389 (March) 1955 [Springfield, Ill.].

Esophagoscopy was performed in 172 patients with cirrhosis of the liver. Roentgen studies of the esophagus were done with the aid of a barium meal in each patient, some before and some after esophagoscopy, with specific instructions to the radiologist to search for esophageal varices. A diagnosis of esophageal varices by esophagoscopy was made in 108 (62.7%) of the 172 patients. In only 24 of the 108 patients esophageal varices were diagnosed by roentgen rays. A negative roentgen report was given in 84 patients in whom varices were visualized by esophagoscopy. Of the 172 patients, 64 had a history of hemorrhage and 108 did not have such a history. Varices were diagnosed by esophagoscopy in 51 (78.1%) of the 64 patients and by roentgen rays in 19 (29.6%) of this group; varices were diagnosed by esophagoscopy in 57 (52.7%) of the 108 patients with no history of hemorrhage and in only 5 (4.6%) by roentgen rays. Less than 10% of the group without hemorrhage was diagnosed roentgenologically as compared with esophagoscopy. These findings were attributed to the fact that larger varices are more apt to be present in patients with hemorrhage than in those without hemorrhage. It would appear from this study that dependence on roentgen diagnosis will only uncover 22% of the cases that can be found by esophagoscopy. Intensive effort to improve the present roentgenologic methods of diagnosis of esophageal varices appears to be needed.

Extensive Bilateral Calcification Within Adrenal Hemorrhage. V. Drucker and C. E. Rodriquez. Radiology **64**:258-261 (Feb.) 1955 [Syracuse, N. Y.].

Drucker and Rodriguez present the case of an infant in whom roentgenoscopy of the chest was requested. The upper abdomen was seen in the roentgenogram, and both upper quadrants showed large calcium deposits, presumably within the adrenals; intravenous urography definitely ruled out the kidneys as the site of calcification. Because the infant was several months old, undernourished, and doing poorly when the calcification was first noted, a tentative diagnosis of adrenal neuroblastoma with calcification was made. Calcification within adrenal hemorrhage was not considered in the differential diagnosis because it was thought that a hemorrhage yielding such extensive calcification would have reduced adrenal function to so low a level that survival would not have been possible. In this the authors were grossly mistaken, since the child lived for almost two years after the initial hemorrhage. On postmortem examination the adrenals were found to be calcified throughout. Thus calcification in the adrenal may signify a tractable hemorrhage rather than tuberculosis or neoplasm. The authors point out that Snelling and Erb found 43 cases of adrenal hemorrhage in autopsies on 3,637 children. This incidence of slightly more than 1% is regarded as too high by other investigators. Adrenal calcification was found in 8 of the 43 cases, but it was never recognized during life.

PHYSIOLOGY

Prolonged Interruption of Circulation During Direct Cerebral Hypothermia. R. De Martini, M. De Gregori, C. Saccon and others. Minerva chir. **9**:1154-1157 (Dec. 31) 1954 (In Italian) [Turin, Italy].

The results of experiments in which the circulation was interrupted in dogs that had undergone direct cerebral hypothermia are reported. Under direct vision, the authors isolated and applied clamps to the superior vena cava, the azygos vein, and the inferior vena cava, which they then closed slowly in the following sequence: inferior vena cava, azygos vein, and superior vena cava. Shortly thereafter the heart was bloodless and the peripheral pressure was zero. Breathing remained spontaneous at the rate of 8 to 10 per minute; the heart rate did not undergo variations; and arrhythmias, severe or irreversible alterations of conduction, and signs of atrial or ventricular fibrillation were not observed. The circulation was interrupted for from 16 to 22 minutes, after which time the vessels were reopened slowly in the following sequence: superior vena cava, azygous vein, and inferior vena cava. There were no rhythm variations; breathing remained unchanged; and the arterial pressure returned to values that were comparable to those recorded before the circulation was interrupted. Two dogs died, and the electrocardiograms suggested that death was caused by an excess load on the right ventricle. This had probably been caused by the fact that the return venous circulation had been opened too rapidly, and therefore the inferior vena cava was kept clamped 10 to 15 minutes longer in the other dogs. With the return of breathing to almost normal and the increase of temperature the changed hemodynamic conditions reduced the excess load on the right ventricle. After the chest was sutured, reheating was begun and pure oxygen was administered. A gradual return of all organic activities to normal followed, and after two days the dogs had completely resumed all functions. The death of a third dog was ascribed to insufficient reheating and insufficient oxygenation during the resuscitation period. Follow-up of the surviving dogs two to six months later revealed that there was no organic impairment and that the heart and cerebral activity had been completely restored to normal.

BOOK REVIEWS

Manual of Hand Injuries. By H. Minor Nichols, M.D., Clinical Instructor in Surgery, University of Oregon Medical School, Portland. Foreword by Michael L. Mason, M.D. Cloth. $9.50. Pp. 352, with 180 illustrations. Year Book Publishers, Inc., 200 E. Illinois St., Chicago 11, 1955.

This well-written book deals primarily with acute injuries of the hand. It is up-to-date in its concepts and is well planned. The general format is excellent, and the type is of sufficient size to make reading easy. The book is well condensed and easily carried. It is recommended for interns, residents, and any physician performing hand surgery. The anatomic drawings would have been much more impressive had they been in color, but this would have added greatly to the cost. The drawings are excellent, and the author should be complimented for his step-by-step line sketches, together with his frequent use of photographs and adjoining sketches to bring out the operative steps more clearly. Exception might be taken to the author's technique in some instances. For example, he states that a plaster cast should not be rubbed once it has started to set. This opinion is not held by a great many physicians. In the chapter on amputations, the author leaves the impression that upper extremity prostheses are of minimal value, but many authorities now believe that their use should be encouraged rather than discouraged.

Fractures in Children. By Walter Putnam Blount, A.B., M.D., F.A.C.S., Chairman of Orthopaedic Section, Milwaukee Children's Hospital, Milwaukee. Cloth. $9.50. Pp. 279, with 311 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1954.

For more than 20 years the author of this book has been telling orthopedists, and all physicians and surgeons who would listen, that fractures in children are different. No one has shown a greater interest in this subject or has had a better opportunity of studying and evaluating methods of treatment of fractures and other injuries to the spine and extremities of children. This beautifully written and generously illustrated book can be used as a reference book or a textbook. Although the author is conservative, he uses all the newer methods that are appropriate and promise more perfect results without increasing the risks to the patient. The chapters include carefully described and well-illustrated techniques of dealing with the more common fractures of the spine and the extremities. The author also discusses the complicated or infected fractures. The chapters describing injuries of the foot and hand should be of special value. In no textbook devoted exclusively to the surgery of the hand will there be found all of the helpful suggestions contained in this book. This is a book that should be in the library of every orthopedist, general surgeon, and general practitioner who is called on to treat a child with a fracture or sprain.

Congenital Syphilis. By David Nabarro, M.D., F.R.C.P. Cloth. $10. Pp. 470, with 95 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2; Edward Arnold & Co., 41-43 Maddox St., London, W.1, England, 1954.

The incidence of congenital syphilis in the United States has dropped so sharply since penicillin treatment that a book on the subject would seem to have little place; yet this book reflects such a vast experience that the material should not have gone unrecorded, since it is largely a historical record of congenital syphilis as seen in Great Britain in the pre-penicillin era. Consideration is given to every phase of the subject including the syphiloids, such as yaws and bejel. In considering the fate of the congenital syphilitic, the author expresses the interesting viewpoint that congenital syphilis bears a strong relationship in general to cardiovascular disease, to herpes, and to polioencephalitis. He believes, too, in the probability of third generation syphilis. Condyloma latum is said to be a lesion of the late infantile form of the disease, a recurrence rather than a primary eruption. The author does not rely on treatment with penicillin alone, preferring to combine it with heavy metals despite the mass of evidence against such practice. The unfortunate term of syphilitic pemphigus is used for bullous syphilid, and it is differentiated from pemphigus neonatorum, a designation long since dropped by American authors in favor of impetigo of the newborn. This well-written book should interest all students of the subject.

Antisera, Toxoids, Vaccines and Tuberculins in Prophalyxis and Treatment. By H. J. Parish, M.D., F.R.C.P.E., D.P.H., Clinical Research Director, Wellcome Foundation Ltd., Kent, England. Third edition [of "Bacterial and Virus Diseases"]. Cloth. $5. Pp. 227, with illustrations. Published for Wellcome Foundation, Ltd., by Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2; [E. & S. Livingstone, Ltd., 16 and 17 Teviot Pl., Edinburgh 1, Scotland], 1954.

This book conforms to the style of the previous editions in presenting the essential principles and practical applications of biological preparations for the detection and production of active and passive immunity to infections of man and animals. The third edition has been revised and expanded to include relatively recent advances and additional references in the text and bibliography to pertinent sources of more detailed information. The author is properly critical of the practical value of certain serums and vaccines and retains a positive approach to those that are firmly established as useful. The book includes some interesting illustrations, a section on the chronology of the development of immunizing agents, a suggested bibliography, and a general index. The binding, paper, and printing are of good quality. Physicians, veterinarians, and students of immunology should find the book a convenient synopsis of practical knowledge in this field.

The Coagulation of Blood: Methods of Study. Edited by Leandro M. Tocantins, M.D. Prepared with help and under sponsorship of Panel on Blood Coagulation, Committee on Medicine and Surgery, National Academy of Sciences, National Research Council. Cloth. $5.75. Pp. 240, with illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16; 99 Great Russell St., London, W.C.1, England, 1955.

This compilation of the more satisfactory techniques and quantitative methods for investigating the chemistry of blood coagulation is intended to be a reference for investigators. The impressive list of contributors includes many well-known workers in this field. Such topics as the proper method of collecting blood and preparation of the equipment are discussed in detail in the first chapter. Other chapters are devoted to determination of clotting time of whole blood, measurement of rate and extent of clot retraction, platelets, and thrombin and precursors including estimation of prothrombin. Precautions and sources of error are emphasized. The appendix includes a list of synonyms and general references for components influencing blood coagulation. The index is adequate. Investigators as well as clinical laboratory workers concerned with accurate measurement of blood coagulation should find this book useful.

Clinical Manual on Aniseikonia: A Lecture Series. By Robert E. Bannon, Staff Member, Bureau of Visual Science, American Optical Co., Southbridge, Mass. Paper. $1. Pp. 120, with 41 illustrations. American Optical Company, Instrument Division, Buffalo 15, 1954.

This manual is based on a series of lectures discussing the clinical evaluation and correction of aniseikonia. It is written so that the clinical ophthalmologist will understand it. The author points out that the eikonic examination should be repeated several times and that some of the difficulty encountered during the space eikonometer test, such as asymmetry or distortion of the target due to incomplete fusion or irregular astigmatism, cannot be corrected. The art of clinical judgment is involved in deciding on the amount of eikonic correction and whether it should be temporary or permanent.

These book reviews have been prepared by competent authorities but do not represent the opinions of any medical or other organization unless specifically so stated.

QUERIES AND MINOR NOTES

SALK POLIOMYELITIS VACCINE AND THE RH FACTOR

To the Editor:—*Has anyone proved that the Salk poliomyelitis vaccine will not sensitize Rh-negative individuals to the Rh factor? Some authorities seem to find that the Rh substance is widely distributed in the tissues as well as in red blood cells. It would seem possible that the Rh factor might be encountered in the kidney cells of the rhesus monkey (on cultures of which the poliomyelitis virus is grown) as well as in the monkey's red blood cells. One assumes that some tissue as well as virus gets in the vaccine, and I wonder if the formaldehyde treatment that allows the preservation of antigenicity of the virus might not also allow the preservation of antigenicity of the Rh substance.* *M.D., Oregon.*

Answer.—The statement that the Rh substance is widely distributed in the tissues has no sound scientific basis. As pointed out by A. S. Wiener (An Rh-Hr Syllabus, Modern Medical Monographs, vol. 9, New York, Grune & Stratton, Inc., 1954, p. 46), carefully controlled experiments do not show the presence of Rh antigen outside of the red blood cells. Reports in the literature to the contrary may be ascribed to misinterpretation of artefacts that occur so frequently in these delicate tests, to inadequate controls, and to the failure to use the blind technique. With regard to the suggestion that injections of poliomyelitis vaccine might give rise to Rh sensitization in Rh-negative individuals, one may safely predict that this will never occur. For further details consult Queries and Minor Notes (*J. A. M. A.* **155:**1020 [July 10] 1954), where this question has already been discussed in detail.

DROWSINESS IN CHILDREN AFTER HEAD INJURIES

To the Editor:—*After a blow on the head or striking the head in falling, many children become drowsy and, frequently, vomit. There prevails in this community the idea that after such accidents children should be kept awake and not allowed to sleep. What procedure should be followed?*

Bert Van Ark, M.D., Eaton Rapids, Mich.

Answer.—The idea that children who have had moderately severe head injuries should be awakened from time to time for several hours after the accident does not arise from the fact that sleep in itself is undesirable in these cases. Awakening the patient is advisable for two reasons. 1. One may be sure that the child is being observed at frequent intervals. 2. By awakening him at about hourly intervals one may be sure that he is not lapsing into stupor or coma. Such precautions are taken in order that complications such as an intracranial hemorrhage may be detected as early as possible. There is no reason why an effort should be made to keep these children awake all the time. It is sufficient if they are awakened from time to time. The most important manifestation of a post-traumatic intracranial hemorrhage is an alteration in the patient's state of consciousness.

CANCER AND VEGETARIANS

To the Editor:—*Is it true that vegetarians are not as prone to cancer as meat eaters?*

E. L. Cavenee, M.D., Champaign, Ill.

Answer.—There appears to be no important evidence that vegetarians are less prone to cancer in general than are meat eaters. A specific exception may be said to exist under the circumstances cited by Ahlbom, that is, the frequency of cancer of the mouth, pharynx, and esophagus in women who have the Plummer-Vinson syndrome, which is apparently a state of dietary deficiency, notably of iron and vitamin B, that is due, at least in part, to the unavailability of green vegetables during most of the year. On the other hand, one may cite the frequency of cancer of the liver in African Bantus, which is also widely held to be a manifestation of nutritional deficiency, but here involving a lack of protein as well as vitamins; the Bantus eat virtually no meat. On the basis of (1) some statistical evidence derived from human beings and (2) experimental observations (notably those of Tannenbaum), it would appear that the quantity of food in terms of calories is of more importance in the genesis of cancer than its quality, with the exception of specific deficiencies such as those cited above.

WASTAGE OF VITAMINS

To the Editor:—*What is the possibility of waste by urinary excretion following the parenteral use of Vitamin B complex and also intravenous use of Vitamin C? This information is desired in connection with the fairly routine use of these vitamins in the preoperative and postoperative period.*

M.D., Iowa.

Answer.—The water-soluble vitamins are not stored in the body and are low-threshold substances; if they are present in excess of immediate body need, excretion results. Vitamin C is important in wound healing and is needed in adrenal metabolism, but there is no evidence that its administration in patients not deficient is of any value. On the other hand, patients on a diet for ulcers quickly become Vitamin C deficient, and older people who do not eat a rounded diet also tend toward deficiency. B complex has many functions, one of which concerns metabolism in nerve tissue. Administration of B complex in large doses sometimes benefits pain of causalgic type but in patients on normal diet does not apparently speed nerve lesion healing. Here again, patients who are Vitamin C deficient also tend to be deficient in B complex. Postoperatively, in nondepleted patients who can eat, vitamins are not needed. In patients who will have gastric suction for three to four days, replacement is not needed. In patients who have been depleted but have been restored preoperatively, postoperative administration is not necessary in the first three to four days. It probably is safe to say that vitamins are as much overused as the antibiotics, and it is very difficult to prove that substances used "prophylactically" have been of specific benefit.

ACHRESTIC ANEMIA

To the Editor:—*Please be so kind as to send me some literature on achrestic anemia. It is defined in Dorland's medical dictionary, 22nd edition, and I have seen it mentioned elsewhere. Todd, Sanford, and Wells (Clinical Diagnosis by Laboratory Methods, ed. 12, Philadelphia, W. B. Saunders Company, 1953) mention it but express doubt that it is an entity.* *John H. Schaefer, M.D., Los Angeles.*

Answer.—A concise description of achrestic anemia is given by Wintrobe (Clinical Hematology, ed. 3, Philadelphia, Lea & Febiger, 1951, pp. 488 and 489). The condition, as described by Israels and Wilkinson (*Quart. J. Med.* **9:**163, 1940), is characterized by a macrocytic anemia with changes in the peripheral blood and bone marrow indistinguishable from those of pernicious anemia and by failure to respond to liver therapy. It runs a chronic but often fatal course; free hydrochloric acid is found in gastric secretions; combined "system" disease of the cord and gastrointestinal disturbances do not occur. Extracts made from the livers of several patients after death induced a therapeutic response in patients with classical pernicious anemia. Many hematologists doubt that achrestic anemia is a true clinical entity. Some have suggested that it is a form of refractory

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The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any medical or other organization unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

anemia, while others have thought it the same as refractory megaloblastic anemia. The latter suggestion is particularly attractive. Refractory megaloblastic anemia has the characteristics listed for achrestic anemia and fails to respond to liver or cyanocobalamin but shows prompt therapeutic response to administration of folic acid. One must remember that achrestic anemia was described before folic acid had been isolated; it is tempting to think that folic acid would have been therapeutically effective. There seems little reason to continue use of the term achrestic anemia.

RECOGNITION OF SPERM IN ANUS

To the Editor:—*A 16-year-old boy was assaulted by a group of men 12 hours prior to my examination. He was knocked unconscious and sustained lacerations of the anus and rectum. These were shallow slits as observed by the proctoscope and contained pus but no pathogenic organisms recognizable by Gram's stain and no sperm, except for two questionable cells that may have been epithelial cells with tail-like structures. These two structures were found after extensive examination of aspirates from various sections of the anus and rectum. As I will be called on by the court for an opinion on whether sperm would be recognizable after 12 hours, I would appreciate your opinion.* *M.D., Indiana.*

This inquiry has been referred to two consultants, whose respective replies follow.—Ed.

Answer.—The recognition of sperm in this case, 12 hours after the time of assault, is very improbable. The action of the intestinal bacteria and the mixture of the specimen with other contents of the colon would tend to destroy semen in a few hours. Certainly no questionable findings should hold any weight in court. The tail-like structures might well come from vegetable fiber or intestinal flagellates. To be valuable as evidence, the absolutely positive identification of the sperm by appropriate staining methods would be necessary. This is probably impossible after as long a period as 12 hours.

Answer.—The failure to demonstrate spermatozoa in aspirates from the anus and rectum 12 hours after the suspected assault does not in any sense constitute evidence that anal coitus did not take place. For that matter, the absence of anal injuries would not have excluded anal coitus. Spermatozoa usually deteriorate very rapidly if the ejaculate is contaminated by bacteria and prevented from drying (Moritz, A. R.: Pathology of Trauma, ed. 2, Philadelphia, Lea & Febiger, 1954, p. 286). It is often impossible to recognize intact spermatozoa in specimens taken from the vagina within a few hours after they are known to have been deposited there. It is reasonable to believe that spermatozoa would tend to disintegrate with equal or greater rapidity in the anus and rectum.

RABIES VACCINE

To the Editor:—*In the literature relative to the administration of rabies vaccine the abdomen is always specified as the site for the injection. As I know of no other injection that has anatomic limitations, I wonder why this site? Is it because of tradition, or is there really a bona fide reason for "the loose skin over the lower abdomen as the preferred location?"* *Joseph A. Davey, M.D., Burkburnett, Texas.*

Answer.—In some of the contagious disease hospitals to which large numbers of persons may be referred for antirabies treatment, the abdominal area has been selected to make the injections for the following reasons: 1. The site is readily available without entirely removing any of the clothing (the time element may be important in an outpatient clinic). 2. The vaccine enters the body at a much lower level than if inserted in the deltoid and for that reason it is barely possible that serious systemic reactions are less likely. 3. The point of injection usually receives closer attention, and any local reaction is observed promptly. 4. When the vaccine is given in the muscle, the right and left rectus are chosen on alternate days for the inoculations, and troublesome reactions are uncommon.

LETHAL DOSES OF ASPIRIN

To the Editor:—*What is the lethal dosage of aspirin in adults and children? After ingestion of what dosage of aspirin should a child's stomach be pumped? Are there any antidotes?* *M.D., North Dakota.*

Answer.—The fatal human dose of aspirin varies rather widely. Sollmann (A Manual of Pharmacology and Its Applications to Therapeutics and Toxicology, ed. 7, W. B. Saunders Company, Philadelphia, 1948), states: "Suicidal attempts with 20 to 30 gm. of the drug are fairly common in Europe. The mortality rate is about 50 per cent, death occurring sometimes with 10 gm., but usually with 30 to 40 gm. A patient recovered under treatment after taking nearly 65 gm." In infants and young children deaths have been reported from much smaller amounts, for example, 1.5 gm. (25 grains) in an infant aged 18 months (*Virginia M. Month.* **80:**147 [March] 1953), and 2 gm. (30 grains) in a baby 5 months old (*J. A. M. A.* **135:**712 [Nov. 15] 1947). Infants and young children are particularly susceptible to the toxic effects of aspirin, and it has been advised that the drug be administered cautiously to children under the age of 2 years. There are no antidotes, and treatment is largely symptomatic. If ingested, aspirin should be removed by lavage. Sodium bicarbonate has been recommended for addition to the lavage solution, but it is not advisable to use this compound in the early stages of the poisoning as it might increase absorption of the aspirin. Intravenous injection of sodium bicarbonate to increase urine elimination is also recommended. Intravenously given fluids to combat dehydration and measures such as sponging the skin to reduce fever may be indicated. Oxygen has been recommended for the hyperpnea in salicylate poisoning.

DIURNAL SWING OF BODY TEMPERATURE

To the Editor:—*Do you have available any generally accepted explanation of the diurnal swing of body temperature in sepsis and other allied infectious, febrile conditions: down in the morning, up in the afternoon?* *M.D., California.*

This inquiry was referred to two consultants, whose respective replies follow.—Ed.

Answer.—There is no generally accepted explanation of the diurnal swing of body temperature in sepsis. There has been a general theory that this has some relationship to bodily activity as indicated by the basal metabolic rate. However, this theory in itself is not especially valid, since there are several septic conditions in which either the swing is reversed or there are several peaks during the 24 hour period.

Answer.—The diurnal swing of body temperature in disease probably is an exaggeration of the normal daily variation. It is generally thought to be dependent on diurnal activity and nocturnal rest. In some persons the fluctuation is not noticeable; in others, in disease, it may be reversed, that is, higher in the morning. The matter is discussed by W. F. Peterson in "Man, Weather, Sun" (Springfield, Ill., Charles C Thomas, Publisher, 1948) and by N. Kleitman (Biological Rhythms and Cycles, *Physiol. Rev.* **29:**1-30, 1949).

ANTERIOR WALL INFARCTION

To the Editor:—*With no other abnormality in the electrocardiogram, what interpretation can be put on a deep, wide QS wave in lead V_1, or V_1 and V_2, or V_1, V_2, and V_3 under the following circumstances: (1) without an R wave in additional leads in the right chest and (2) with an R wave in the right chest leads? How would the QS wave in V_1, or V_1 and V_2, or V_1, V_2, and V_3 be interpreted with or without an R wave in additional leads in the right chest in the presence of a history of coronary disease or electrocardiographic evidence of previous infarction, bundle branch block, or left ventricular hypertrophy?* *W. M. Markley, M.D., Pittsburgh.*

Answer.—In the absence of a pattern of strain of the left side of the heart or left bundle branch system block pattern, the finding of QS in V_1 to V_3 is suggestive of anterior wall infarction. It may, however, be present in the absence of infarction when the heart is "electrically" vertical and rotated in a clockwise direction, that is when the transitional zone is shifted to the

left. The diagnosis of anterior wall infarction is supported by (*a*) the finding of an rS complex to the right of the leads showing the QS complexes and/or (*b*) the finding of prominent Q waves (QrS, QRs or QR) in leads to the left of the QS complexes, that is in the transitional zone. In the presence of strain of the left side of the heart or left bundle branch system, QS complexes in V_1 to V_3 cannot be considered evidence of anterior wall infarction.

PERSISTENT URTICARIA FOLLOWING PENICILLIN

To the Editor:—*In answer to the query regarding persistent urticaria following use of penicillin in* The Journal, *Feb. 26, 1955, page 782, your consultant stated that "it is very likely that the allergic phenomena described are due to the original dose of benzathine penicillin G." While it is well known that penicillin will produce severe urticaria and that such urticaria may not develop until three to four weeks after the last administration of the drug, there is considerable question as to whether or not urticaria persisting for three months is due to the original administration of penicillin. If the patient has a chronic fungus disease, this phenomenon may be due to cross sensitization (Cormia, F., and Lewis, G.: Experimental Aspects of Penicillin Sensitization, with Special Reference to Conjoint Sensitization to Superficial Fungus Disease,* J. Invest. Dermat. **7**:*375 [Dec.] 1946). In the* Schoch Letter *of October, 1954, Murray Zimmerman comments that persistent penicillin urticaria may be perpetuated by milk containing small amounts of penicillin. The penicillin in cow's milk may result from the fairly common practice of penicillin therapy for mastitis. In still other instances, an urticarial penicillin reactivity may serve as a trigger mechanism for a persistent psychosomatic type of urticaria. I have seen several instances of this complication, the first of which was documented in "Psychosomatic Factors in Dermatoses"* (Arch. Dermat. & Syph. **55**:*601 [May] 1947).*

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PIGMENTED NEVUS

To the Editor:—*In* The Journal, *March 26, 1955, page 1173, the question was asked whether a melanoma has ever been caused by surgical removal of a pigmented nevus. In stating that there is no evidence to support the idea that adequate surgical removal of a pigmented nevus will cause a melanoma to develop the answer is correct. However, it is also stated that inadequate destructive measures applied to a junction nevus may cause it to eventuate into a melanoma. That statement is not borne out by any method of scientific control. There is a difference of opinion, but many competent dermatologists believe that any "junction nevus" that becomes a melanoma either was a melanoma before surgery or would have become so, regardless of "inadequate" therapeutic interference. The clinical diagnosis of a benign nevus, junction nevus, or melanocarcinoma is not too difficult. The statement made that every nevus should be completely and widely excised or completely destroyed well beyond and below its borders is not in accordance with modern dermatological procedure. Given a clinically benign nevus, there is no reason for radical destruction with a resultant unsatisfactory cosmetic defect. It may be destroyed only in part by either light electrodesiccation or by the galvanic current with very pleasing cosmetic appearance. Thousands of such nevi are treated in this manner in everyday practice with perfect safety.*

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To the Editor:—*In* The Journal, *March 26, 1955, page 1173, under Queries and Minor Notes the question was asked by Dr. Jacob Greenblatt of Stamford, Conn., "Has a melanoma ever been caused by surgical removal of a pigmented nevus?" The consultant in essence correctly answered in the negative. However, he added that "fulguration or any inadequate destructive removal of nevus may eventuate in a melanoma." Surgical excision is, of course, the preferable form of removal of all nevi. However, there is no evidence to support the fact that a single trauma such as the partial removal of a benign nevus ever results in the transformation of that nevus into a melanoma. When a growth, presumed to be a nevus, is removed, no matter by what type of surgical technique, and it subsequently recurs as a melanoma, then it was originally misdiagnosed. This is the reason for insisting upon microscopic examination of the tissue. The second question was: "What are the chances of a pigmented nevus of the sole of the foot becoming malignant?" In answering the question, the consultant correctly stated, "the chances of a pigmented nevus of the sole of the foot becoming malignant are great." But he failed to explain the fundamental significance of this fact. The reason that a great number of melanomas occur on the soles and the palms as well is due to the fact that almost all nevi located in these anatomic sites are of the junction variety histologically. This is the type of nevus that has the potentiality of transformation to melanoma.*

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ENLARGED TONSILS

To the Editor:—*In* The Journal, *Jan. 8, page 202, was a question concerning enlarged tonsils and severe loss of hearing. The consultant advised removal of the tonsils and adenoids. I feel this answer is incomplete and that the child should be reexamined 8 to 10 weeks after the tonsils and adenoids have been removed to ascertain whether or not the condition has been corrected. Often there is lymphatic tissue obstructing the eustachian tube that cannot be removed surgically and radium or x-ray therapy is indicated. Crowe and Baylor* (J. A. M. A. **112**:*585-590 [Feb. 18] 1939) have stated that if the above is done, "the number of deaf adults in the next generation could be reduced by 50%." An extensive bibliography is quoted in my paper (J. Pediat. **39**:*223-236 [Aug.] 1951).*

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The above letter was referred to Dr. Samuel J. Crowe, Johns Hopkins Hospital, Baltimore, to inquire if he had changed his opinion on the above percentage since 1939. Dr. Crowe replied as follows:

Our impression in the late 1930's was that the number of adults with impaired hearing could be reduced by 50%, if children in the primary grades of our public schools were examined with an otoscope and an electric nasopharyngoscope and properly treated. The routine procedure throughout the country at that time was to test the hearing and send a note to the parents. For financial reasons, often nothing was done for the child. In 1939, we examined with the greatest care 1,365 schoolchildren who lived in the Eastern Health District of Baltimore. The hearing of each child was tested on several different occasions in a soundproof room at the Johns Hopkins Hospital. Sixty-seven, or about 1 in 20 of these apparently healthy schoolchildren were found to have impaired hearing for all tones and some difficulty in understanding spoken words. Many more had lesser degrees of impairment. This study was interrupted by the war.

A second study of 5,428 third grade schoolchildren was begun in November, 1948, and terminated five years later. Screening tests showed that 582 (10.7%) had some impairment of hearing. The hearing of the remaining 4,846 children was good. It is interesting that in this antibiotic era only 7 of these 582 children had discharging ears. Recurring attacks of otitis media and chronic mastoiditis were common causes of impaired hearing before the days of sulfonamides and antibiotics. In the second and third decades of the present century, ear and sinus infections were more frequent than noted above, and I think for that period the 50% prevention figure was not too high.

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